Volume 93 Number 2

STEEL

For forty-eight Years—IRON TRADE REVIEW

PRODUCTION • PROCESSING • DISTRIBUTION • USE

The Week in Perspective

STEEL may experience vicissitudes in production and pricing, but it remains constant as the phlegmatic base of industry and encouragingly often makes forays into the finer uses, such as the 60 all-metal, low-winged, twin-engine transport planes recently introduced by a transcontinental air line. For this uncompromising service, involving as many as 13 lives per flight, alloy steel is used (p. 23) for a variety of high-stressed parts. Specifications are exacting, inspection is constant throughout all fabricating operations, untreated as well as heat-treated material is used, some parts are cadmium plated to retard corrosion, but alloy steel meets every requirement.

Water or Milk, Steel Stands Off Both

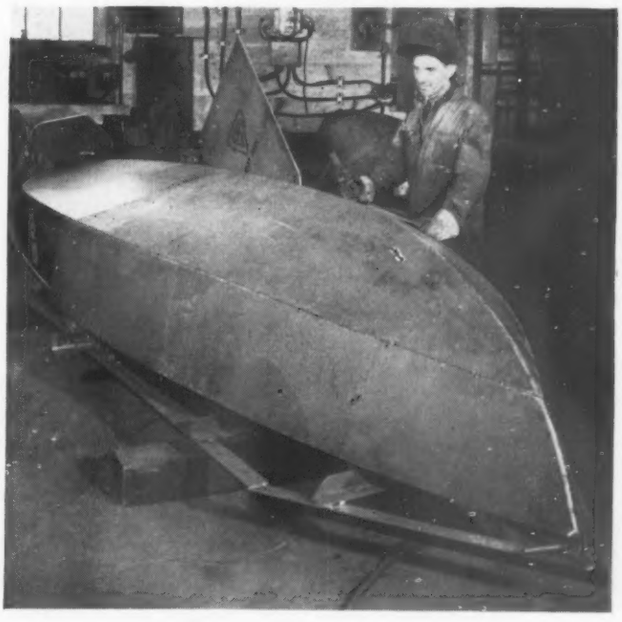
Coming down to earth for a less spectacular and more utilitarian use, steel in the form of copper-bearing, interlocking sheet piling anchors (p. 27) a west coast fog signal station against the ravages of heavy seas. Driven 15 feet into sand, the piling supports a heavy concrete slab on which the station stands. . . . Resisting milk in this instance, 18-8 chrome-nickel sheets have been fabricated (p. 25) into 1000-gallon collection tanks for a chocolate manufacturer. Serving as bases for farmers' milk supplies, these tanks, which are oxyacetylene welded, have their edges flanged over slightly before welding to prevent warping of the seams.

Shorter Week To Change Furnace Practice

Among vicissitudes confronting the industry is rehabilitation of open-hearth furnaces robbed of equipment during many months of idleness. A poll at the recent A. I. M. M. E. convention at Chicago discloses (p. 28) that practically all independent plants are operating 8 hours per day, 6 days a week, with no provision yet for a possible 4-day schedule. Other topics at the convention included stopper rods, insulated ladles and furnace roofs, combustion control and inclusions in steel. . . . There is good authority (p. 32) for insulating roofs of open-hearth furnace ends, the degree depending upon the thickness of the silica roof brick. This insulation, ordinarily loose material, should be applied in thickness until the temperature of the cooler side of the brick is about 1800 degrees Fahr.

Famine Threatens if Light Scrap Is Ignored

What is charged under these open-hearth roofs also is important. Each year not only sees reserves of high-grade iron ore in the Lake Superior district further depleted but also witnesses greater diversion of the resulting steel



Teredo navalis, fierce marine mollusk, meets his match in "Lynx," 16-foot cat-rigged boat designed by S. B. Jones Jr. and R. S. Rose, Boston. No. 16 gage ingot iron sheets, welded, are stiffened by a pipe frame. Photo courtesy Ingot Iron Shop News

into the lighter forms, from which the ultimate collection of scrap is negligible (p. 20). Encouragement of the collection of the lighter and cheaper forms of scrap, in which consumers co-operate with dealers, is urged. . . . Last week open hearths operated (p. 15) at 55 per cent, with a further rise indicated for this week. . . . Final statistics on June ingot production show (p. 15) a daily rate of 99,904 tons, with a first half year total of 8,989,192 tons exceeding 1932.

Steel Rate Up to Railroads, Building

July steelmaking operations appear secure at the present rate, due to heavy specifications against protections at old prices, but late summer activity hinges (p. 39) upon the railroad and building industries. Automotive requirements are expected to taper; tin plate at 95 to 100 per cent is at its maximum; other major consumers must contribute. . . . England continues to rationalize her steel industry, three big northeastern producers merging (p. 59). The Continent is buying more tin plate; Middlesbrough furnaces have advanced prices; the English export trade is improving; the French and Germans report heavier domestic buying.

Labor Forcing Pay Rises as Code Lags

Drafting a code under the national recovery act that will fix equitable wage rates and hours for both northern and southern plants continues to tax the industry (p. 11), but contact is being made with Washington and action this week seems probable. . . . Meanwhile, labor grows more restive, one strike being successful (p. 11), and sporadic wage rises at unrelated points continuing. . . . Scrap is the first department of iron and steel to adopt a code, the Chicago convention proposing (p. 12) a 40-hour work week and a 37½-cent hourly minimum. . . . In Washington, which is baffled because codes are not tumbling in, the social concept of industry is gaining headway (p. 13), and Secretary Perkins' influence for labor is stronger.

This Will Interest Engineers

Taper roller bearings for the Chicago district 84-inch 4-high cold mill incorporating electrically-welded, laminated, forged steel plate housings are unique (p. 26); serving the backing-up rolls, these bearings are 51 inches outside diameter, have capacity of 6,000,000 pounds at mill speed, are high-carbon high-chrome electric steel. . . . A new overnight test for determining the endurance limit of metal, described before the A. S. T. M. (p. 30), is a short cut for the usual fatigue test.

The VOICE of INDUSTRY

Communications appearing here do not necessarily reflect the opinion of STEEL *or of its editors.*

"Sweat Shops"

"Many difficulties of the scrap industry may be traced to irresponsible dealers who either through ignorance or deliberately, avoid the legitimate burdens and overhead charges imposed upon industry. The dealer who is paying less than a living wage to his labor, who is not covered by compensation and liability insurance, and other legitimate charges, is operating a 'sweat-shop.'

"In buying scrap, he is of course able to offer more than it is worth on the market at any time, and in selling it to a consumer, he can offer it for less than the legitimate dealer. It only takes a small tonnage of this type of scrap, produced and sold under these unfair advantages, to set a market price and to seriously disturb market conditions. It is impossible for the yard dealer or broker who pays a fair wage and takes care of fixed costs and overhead, to compete with this type of merchant. If the industrial control law will accomplish anything, it will definitely eliminate this type of competitor from every branch of industry."

BENJAMIN SCHWARTZ, addressing Institute of Scrap Iron and Steel.

Reciprocity Between Employe and Employer

"Your employers . . . have never told you, or anyone else, even a small part of their troubles. If they had, you would have rushed panic-stricken to your banks, withdrawn your savings and brought down the house upon your own heads.

"Your employers have put their best foot forward; they have begged and borrowed all they could to keep factory and store open; they have worked by day and worried by night to give you what little employment you have had. In fact, many employers would have lost less money in the last three years by shutting down their factories and offices completely. But they have felt a distinct moral responsibility toward you as their employes, and have tried to give you some employment. Now the situation is reversed.

"Business activity is quickening. The acute unemployment crisis is easing. This is the time for you to reciprocate the responsibility your employers have felt toward you during the crisis by keeping the 'boat trimmed.'

". . . . The real problem, then, is to get all employes back to work and to get the concern running full time before raising the wages of those already at work."

ROGER W. BABSON, in a press release addressed to "wage workers."

Recovery . . . Election . . . Inflation

"If 1932 had not happened to be a presidential year, the recovery begun then might have continued without any serious interruption so that we might have been about where we are today. Personally I feel that the recovery then beginning would have continued, barring the election, if the Glass banking reform bill, in the form in which it was reported from the senate banking and currency committee in May, had been put upon the statute books before the adjournment of congress last summer.

". . . I do not believe the price level of 1926 can be restored without a very serious inflation and it is to be hoped that the administration is wrongly quoted in this matter and that the goal actually aimed at may be much more modest, so that we shall not again be faced with another serious problem of deflation."

—EDMUND PLATT, vice president, Marine Midland Corp., at University of Virginia Institute of Public Affairs

Steel Wages Up as District Variations Delay Trade Code

NEW YORK

WAGE rates threaten to become a paramount issue in the iron and steel industry, pending further delay by the American Iron and Steel institute in approving its trade practice code under the national industrial recovery act.

Labor, aroused by the emphasis placed by the recovery administration upon wages, and perhaps quietly incited by organizers for the American Federation of Labor, tends to become restive.

First outbreak came in the Monroe, Mich., mill of the Newton Steel Co., sheet manufacturer, when 1000 employes July 1 demanded a scale 10 per cent higher than the February one. An adjustment was made by a 5 per cent advance.

Sharon Steel Hoop Co., Sharon, Pa., has advanced its rates 15 per cent, effective July 1, bringing the base labor rate to 35 cents an hour, it being stipulated that any advance by the entire industry beyond this rate will be met.

Others Fall in Line

Davison Coke & Iron Co., Pittsburgh, July 6, announced an increase of 11.9 per cent for the 400 employes at its Neville Island plant, thus rescinding a 10 per cent reduction last Dec. 31. On June 16 the Davison company raised labor at its limestone quarries at Templeton, Pa., 20 per cent.

Jones & Laughlin Steel Corp. has announced a 14.2 per cent increase affecting 1800 mining employes in Washington county, Pennsylvania. Previously the Youngstown Sheet & Tube Co., Republic Steel Corp. and Pickands-Mather & Co. had advanced their coal mining wages 10 to 12 per cent.

Previous increases in rates at steel mills include 10 per cent each by the Andrews Steel Co., Newport, Ky., and Continental Steel Corp., Kokomo, Ind., and 5 per cent by the Allegheny Steel Co., effective July 1. Early in June the Pittsburgh Screw & Bolt Co. lifted its rates 10 to 15 per cent.

Meanwhile, organizers for the metal trades department of the American Federation of Labor have called meetings in practically all iron and steel and metalworking cities, emphasizing the right to organize under the recovery act. Unions have reduced their initiation dues to almost nothing to stimulate joining.

The larger steel producers, however, report no danger to their employe representation plans, partly because no payments are involved and also because the increased volume of business has greatly fattened pay envelopes through tonnage bonuses.

While machinery manufacturers and many metal trades interests have organized the Machine and Allied Products institute to co-ordinate the activities of various trade groups now existing in the industry and to make provision to meet conditions of the recovery act, a prime consideration is the maintenance of the open shop. This group, along with the National Metal Trades association, continues to urge interested manufacturers to go slow with their codes, awaiting action by the so-called "key" industries.

John W. O'Leary, Chicago, heads the Machine and Allied Products institute. Other members include: George H. Houston, president, Baldwin Locomotive Works: George Doubleday, Ingersoll-Rand Co.; Max Babb, Allis-Chalmers Mfg. Co.; Col. R. H. Morse, Fairbanks, Morse & Co.; Paul De Wolf, Brown & Sharpe Mfg. Co.; W. S. Elliott, Elliott Co.; M. W. Pickering, Farrel-Birmingham Co.; P. E. Bliss, Warner & Swasey Co.; Jacob D. Cox, Cleveland Twist Drill Co.; Fred A. Geier, Cincinnati Milling Machine Co.; Phillip Morgan, Morgan Construction Co., E. A. Muller, King Machine Tool Co., Cincinnati, and M. J. Reed, Diesel Engine Manufacturers association.

Reschedule Steel Meeting

Postponed for the second consecutive week, it now appears that the Iron and Steel institute meeting to consider its trade code will be held this week, with the code filed shortly thereafter. While various problems are being considered, the principal cause for delay appears to center around the question of hours and wage rates. These questions are now in the hands of subcommittees, to be returned to the executive committee shortly.

Meanwhile, there are no definite indications as to what the schedules will be, but they probably will vary in accordance with the geographical locations of plants. It is believed that the rather broad divisions of North and South, as suggested in both the textile and the soil pipe codes, will not apply to steel and that there will be a further refinement.

It is confidentially expected and understood that the Johnson administration has indicated that where a particular standard of living conditions had long been in effect in a general community, it would not consider it necessary to disturb its re-

A RAILROAD TRACK BEAUTY PARLOR: The Franklin Institute, of Philadelphia, has awarded to the Industrial Brownhoist Corp., Bay City, Mich., its John Price Wetherill medal "in consideration of the high degree of ingenuity in design and execution of detail embodied in a successful machine for cleaning railway ballast, resulting in a real contribution to railroading and the solution of a maintenance problem of great moment, especially under traffic conditions of extreme density." The equipment pictured above, largely of steel, is in use on the Pennsylvania railroad

lationship with other communities. This has been interpreted in some quarters as applying to communities within less than a few hundred miles of each other.

This particular question has involved no little discussion, if not controversy, among steel interests even within a particular state. For instance, one mill in a rural community is paying 28 cents and another in a rural town within 100 miles is paying 34. The former mill claims living conditions are less in its town. hence any percentage increase should be predicated on existing rate. The latter claims if wages comparable to its own were paid, living conditions would be higher and that it should not be handicapped by a difference of 6 cents in the hourly rate in competing with the first mill. These and other similar questions are having to be reconciled.

To Name Rates and Hours

It is believed that the code when ready for presentation in Washington will specify minimum basic wage rates for perhaps various districts, the number is yet to be decided upon, and that maximum working hours will be named, these being the two particular questions the administration wishes settled.

While allusion undoubtedly will be made to other problems, it is believed in some quarters that a continuing committee with subcommittees will be set up to work out further details which will become effective once they are approved by the main committee.

The question of added capacity being subjected to approval of Washington administration as outlined in the textile code will likely receive some treatment, but the opinion prevails that questions of such expansion will be largely a matter for the steel industry to govern, possibly through a standing committee of its own. While until recently confusion existed as to where Washington stood on certain questions, most of this has now been classified, it is said.

Report Satisfactory Progress

Gen. Hugh S. Johnson, head of the recovery administration, has been in conference with Robert P. Lamont, president of the institute. K. M. Simpson, consulting engineer and metallurgist, and president of the International Chromium Process Corp., has also been in conference with the industry. General Johnson said in Washington Friday that he is satisfied with the progress being made.

There is some speculation that Mr. Simpson or Arthur D. Whiteside, president of Dun & Bradstreet Co. Inc., may be the deputy administrator in charge of the iron and steel code. Associated with Mr. Simpson is John Van Wicheren Reynders, consulting engineer, formerly with the Pennsylvania Steel Co., Central Iron & Steel Co. and American Tube & Stamping Co., as noted in STEEL, June 12.

It is now apparent that if the iron and steel code is adopted, a committee for the industry may be set up to

(*Please turn to Page* 47)

Scrap Code Calls For 40 Hours, 37½c

A MINIMUM wage of 37½ cents per hour with 40 hours as the maximum work week was approved at the annual convention of the Institute of Scrap Iron and Steel in Chicago, July 5, as the base for a scrap code under the national industrial recovery act.

The convention overrode the recommendation of the preliminary code committee that the minimum wage be 33 cents per hour. It is predicted by Benjamin Schwartz, director-general, that employment in the industry will be increased at least 25 per cent. Whatever differential must be established for labor in the South will be left to the recovery administration.

Attack Reciprocal Agreements

The convention also recommended that the recovery administration be asked to help eliminate reciprocal agreements between steel mills and producers of scrap, involving scrap. It was pointed out that these direct deals are not weapons of unfair competition against the scrap iron dealers but also among the steel mills themselves, affecting both the price structure of finished steel as well as employment conditions in the scrap iron industry.

The convention voted to incorporate into the new code all the rules of the code of business practices approved by the federal trade commission in 1929 for the scrap iron industry. This move will add to the enforcement of the old code the additional powers and penalties provided for in the recovery act.

The trade commission code includes such subjects as defamation of competitors, inducing breaches of contract, commercial bribery, failure to fulfill contracts, wilful overbilling of shipments, arbitration of disputes, cost accounting, fictitious bills of lading, misleading price quotations, top-dressing of cars, failure to give credit for overweights. These rules were accepted by the code committee in principle, with the provision that some of them will be rewritten by a drafting committee to be appointed later.

The following machinery was adopted for the enforcement of the code within the industry, as a measure of self-government with the cooperation of the recovery administration:

East of the 13 chapters will appoint an enforcement committee consisting of the President of the chapter and two other members. This committee will receive complaints of violations, investigate them and submit their findings of directors of the institute, who will be the national enforcement agency.

The board will have the final authority in determining upon the penalties and measures to eliminate violations, either within the industry or with the co-operation of the government. As an additional enforcement measure, the code committee recommended that each firm operating in the scrap iron industry submit periodic reports to the President, as he may see fit to demand under his powers of the recovery act.

Defer Price Stabilization

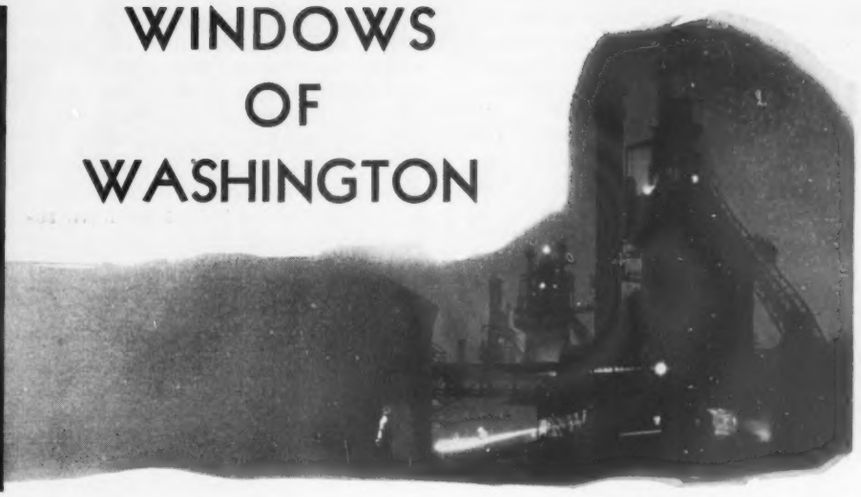
It was decided that any discussion or action on the question of price stabilization or on any rule condemning the sale of scrap below cost, shall be deferred, pending action that may be taken by the American Iron and Steel institute.

Voting to extend the ending of the fiscal year of the institute to December 31 present officers of the organization were re-elected for the rest of the year. These include: President, Herman D. Moskowitz, Schiavone-Bonomo Corp., New York; vice presidents, Myron A. Cohen, M. Cohen & Son Co., Cleveland, Frank Parker, Iron & Steel Products Inc., Chicago, Charles Dreifus, Charles Dreifus Co., Pittsburgh, Ben Cohen, Louis Cohen & Son, Wilkes-Barre, Pa., B. P. Williams, Hickman, Williams & Co. Inc., St. Louis; secretary, Walter Erman, Erman-Howell & Co. Inc., Chicago; treasurer, Thomas F. Kelly, Brooklyn, N. Y.; chairman of executive committee, Phil W. Frieder, David J. Joseph Co., Youngstown, O.

The following directors whose terms expired were re-elected: Herman D. Moskowitz; Phil W. Frieder; W. J. Ross, Hyman-Michaels Co., Chicago; Samuel N. Summer, the Joseph Schonthal Co., Columbus, O.; Ike Wilkoff, Wilkoff Co., Youngstown, O.

New directors elected for three years include: Alex Luria, Luria Bros., Reading, Pa.; Louis J. Borenstein, Indianapolis; Sam W. Rubin, Wellsville Iron & Steel Co., Pittsburgh; Joseph Maher, Pennsylvania Wood & Iron Co., Buffalo. David H. Cohen, D. H. Cohen & Co., St. Louis, was elected director for one year to fill an unexpired term.

WINDOWS OF WASHINGTON



'Social Minds' Seek Control

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Labor Day Is Code Deadline

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Cut Steel Division in Half

WASHINGTON

A MAN who usually reads events accurately has been watching industry make its pilgrimage to the headquarters of the industrial recovery administration, and is reminded of a familiar scene in the Michigan Central railroad station in Detroit: Long files of prisoners handcuffed in pairs taking the train to the state prison in Jackson.

On the faces of these prisoners he could discern traces of both relief and despair—relief that the uncertainty of their fate was ended and that they were about to make amends, despair over the complete loss of their liberty shortly as the prison gates closed behind them.

From industry now coming to Washington this man gets a similar reaction. He glimpses indications of relief that the long dark night of the depression, with its unbridled competition and killing price cutting, is over; he senses despair at the exchange of initiative for enforced cooperation and the approaching plunge into the economic unknown.

The President and some advisers are represented as believing that despite the improvement in business since March, the nation continues in a state of emergency and there still are some shocks ahead, hence the necessity for concentrating the program of the recovery administration on the mitigation of the crisis and the stimulation of recovery.

But there also is an influential group, touching the presidential periphery at many points, which maintains that industrialists have been proved hopelessly inept by events since 1929, that introduction of a new social order in which the position of labor is paramount is the only way to recovery, and that the social concept of industry must prevail.

Of this latter group, Secretary of Labor Perkins is the rallying point, and with Prof. Raymond Moley, head of the "brain trust," returning from the London conference empty handed, she promises to become more powerful than the trust.

GREAT stress is placed by the organization of Gen. Hugh S. Johnson, administrator of the recovery act, upon the voluntary aspect of trade codes being drafted in accordance with the act.

It is true that the best minds of industry are focusing upon these codes, but within the narrow range permitted by the blinders affixed by the administration.

For example, the major concern in the first codes is wage rates and work weeks. Prices are secondary, and profits and dividends something for the future.

Normally, price advances precede and make possible higher wages. The history of this depression, as of all, has been that prices broke rapidly but wages were artificially held. Now they are the first consideration.

Some describe the effort to exact increased wages from a stationary price position as a capital levy, which the English labor government unsuccessfully sponsored shortly after the war.

Whenever industry does enter the profit area, which will be more the result of volume than of remunerative quotations, the intention is to hold this margin to a very thin veneer, backed by a thick wage base. The word dividend is becoming archaic in Washington.

Presumably the wage rates and work weeks established in various industries by trade codes are for the duration of the recovery act, or two years from June 16, but it is frankly stated that the experience of the codes will be the basis for future state and national legislation.

The movement under way to legislate minimum wage rates and maximum hours of work in all states is receiving much impetus from the recovery program. This co-operation between the administration and the states is manifest in the passage by Ohio of a law applying the recovery act to intrastate business, with similar proposals before the legislatures of California and Wisconsin.

Thus it appears that while industry is being marshalled at Washington to save itself and the country, it is also in a test tube for the "social minds."

CONSIDER also the radical character, from the viewpoint of open shop industry, of the counsellors flanking the deputy administrators sitting in judgment on trade codes. The industrial group is "safe" but the labor and consumers' advisory boards are packed with "social minds."

Including Dr. Leo Wolman, chief labor counsellor, there are nine on the labor advisory board, of whom eight are outright representatives of organized labor; the ninth is a Catholic priest. Originally it was the intention of General Johnson to have unorganized labor, which he estimated at 90 per cent, represented. Incidentally, one of the labor representatives is leading a strike of 50,000 clothing workers.

On the consumers' advisory board are seven, three of whom are college professors, two are executives of leagues of women voters, one a social worker and the seventh is a business executive.

Much of the early enthusiasm of industry to co-operate with the Johnson organization has evaporated, it is believed, because of the hostile attitude of the labor advisory board, which has been voicing the orthodox creed of union labor and some of the social aspirations of Secretary Perkins.

There is no disguising the disappointment of General Johnson that up

to Friday only one major code—that of the textile industry—had even been heard, let alone being ready for recommendation to the President. This delay prompted the intimation from the White House that if the lag continued a proclamation fixing maximum hours of work and minimum rates of pay for the reluctant industries might be issued.

Further evidence of disquietude was seen in the statement of Donald R. Richberg, general counsel for the Johnson administration, that unless industry promptly takes advantage of the opportunity for self-government under the recovery act, "the advance of political control over private industry is inevitable."

This is typical of the present situation in Washington—an attorney for railroad labor unions threatening United States Steel, General Motors, General Electric, Baldwin, DuPont, all industry in fact. Mr. Richberg's deadline, like General Johnson's, is Labor Day.

Attorney General Cummings also has started to beat the drums, practically threatening the aluminum industry and steel rail manufacturers with antitrust law prosecution unless they "come under the wing" of the recovery act.

Steel rails, Mr. Cummings charged, have been showing a steady rise while other products have dropped. The fact is that open-hearth rails were pegged at $43 a ton from 1922 until last October, when they were reduced $3 to $40 a ton.

The thrust at the aluminum industry hits Andrew W. Mellon, former secretary of the treasury.

Incidentally, Railroad Co-ordinator Eastman believes rail prices should be lower and has stated that he plans to look into the rail matter at his earliest opportunity. During the last regular session of congress Senator Couzens wrote to Mr. Eastman concerning the price of rails, this being referred to the department of justice, from which only so-called progress reports have emanated.

It developed late last week that some delay might attend the President's promulgation of the textile code because an advantage might accrue to producers of rayon. It was also stated that some code hearings might be held outside of Washington, and that the administration might proceed simultaneously with several codes.

Also hanging over the Johnson administration is the possibility that someone may take the recovery act into court and have it declared unconstitutional. General Johnson professes to believe that once he has lined up the iron and steel, automobile, textile, coal and oil industries he need not worry over that contingency.

General Johnson makes a showing of harmony with all interests represented in his organization, but is privately believed to feel that the labor attitude has been a deterrent. General Johnson also believes better business has delayed the filing of some codes. About 52 small codes have been received. He sees indicators that some industries have received poor legal advice, bearing too heavily on price, which precipitated Attorney General Cummings statement.

At the close of the textile hearing a week ago, General Johnson said:

"Never in economic history have labor, industry, government and consumers' representatives sat together in the presence of the public to work out by mutual agreement a 'law merchant' for an entire industry. There were no harangues. Epithets gave place to arguments. There was no emotional appeal. It is the atmosphere of the 'new deal.' It is a great day for progress and recovery."

But, the codes of the big industries are not coming in.

INSERTED in the textile code at the last minute is a clause more radical even than the fixing of wage rates and a maximum work week. It is a virtual embargo on expansion and replacement of equipment. It results in a dictatorship of progress.

This clause states that a certificate must be obtained from the administrator "prior to the installation of additional productive machinery by persons engaged or engaging in the cotton textile industry, except for the replacement of a similar number of existing looms or spindles or to bring the operation of existing productive machinery into balance."

In iron and steel the only major program now under way is that of the National Steel Corp., which is installing two additional open-hearth furnaces and other equipment at its Great Lakes plant in Detroit. But the effect upon the industry of requiring a license to replace any unit is obvious.

Some regard this as the greatest excursion yet of the administration into control of the type which Senator Hatfield, Republican, charged makes the "new deal" in keeping "with the preachings of Norman Thomas, Stalin, Mussolini and Hitler."

This clause is inspiring predictions that the recovery act, or the Russianization of American industry, as the Republican party probably will characterize it, will become the big issue of the presidential campaign in 1936.

THERE is, of course, a constructive side to the recovery administration and the President's program.

To the less adventuresome the prospect of leveling off competition and regimenting industry is more alluring than the chance of greater profits in free and open competition.

There is no serious objection to the viewpoint, inconsistent as it is with the Democratic creed, that the antitrust laws have operated unfortunately and have stimulated a brand of competition that has made it more difficult instead of easier for the small manufacturer to survive.

With prices restrained and industries generally operating on a single price, the opportunity to sell on the basis of service and quality will be greatly enhanced. The Roosevelt administration may claim the renaissance of the art of selling as a major achievement.

There are inconsistencies, also, in the Roosevelt program, most serious of which is the clash between the President's desire for higher commodity prices and the insistence of the "social minds" that prices be held in check until higher wages have had a chance to expand purchasing power.

In Mr. Hoover's early days as secretary of commerce, it will be recalled, he sought to define clearly the status of open price associations and utilize them in his plan for strengthening industry. However, certain practices of these associations and inability to get a clear statement from Attorney General Daugherty prompted Mr. Hoover to denounce these associations, at the same time being careful to distinguish between them and trade associations.

Now, pressed to take a definite stand on prices and desiring to avoid price fixing, General Johnson is understood to be considering a plan for concentrating price information at Washing-

(*Please turn to Page* 60)

No Dumping of Tin Plate From Germany Found

Dean Acheson, acting secretary of the treasury, has found that the issuance of a dumping order covering tin plate strips imported from Germany into the United States is not justified.

This decision was reached in connection with a notice of suspected dumping covering a shipment of tin plate strips from Germany issued by the appraiser of merchandise at Philadelphia.

Appraising officers who have been withholding appraisements on tin plate strips from Germany have been authorized to appraise them without regard to any question of dumping.

African Manganese Arrives

Arrival of 6500 tons of manganese ore from British West Africa was a feature of importations of Philadelphia during the week ending July 1. Nine hundred twenty five tons of pig iron from British India also were received.

June Ingot Rate 34 Per Cent Above May; Best in 26 Months

PRODUCTION of steel ingots in June was at the rate of 99,904 gross tons per day, the highest rate since April, 1931, when 106,421 tons per day was turned out. The June rate was 34 per cent greater than that of May, when it was 74,148 tons. The per cent of operation in June was 45.96, compared with 34.11 per cent in May, according to compilations of the American Iron and Steel institute.

For the first six months of 1933 the average daily output was 57,995 tons in spite of unusually light production the first three months. This compares with 49,380 tons per day for the first six months of 1932. Total calculated output for six months in 1933 was 8,989,192 gross tons, compared with 7,697,210 gross tons in the first half of 1932. Average per cent of capacity engaged during first half, 1933, was 26.68 and in first half of 1932 it was 22.81 per cent.

Steel Rate at 55, Rising This Week

ADVANCES in the Chicago, Youngstown, eastern Pennsylvania, Birmingham, Buffalo, Wheeling and New England districts, plus a stationary condition in the Detroit, Pittsburgh, Cleveland and Lorain districts, lifted the operating rate last week to 55 per cent. Schedules calling for advances at Youngstown, Buffalo, Cleveland and Pittsburgh this week indicate a rise of at least another point this week. Details for various districts follow:

Pittsburgh

Steel ingot operations held at 46 per cent last week, the Tuesday holiday made inroads into an advancing ingot schedule in most plants. Several mills closed their open-hearth departments for 24 and 48-hour periods beginning either July 2 or July 3. Much-needed repairs were accomplished during the shutdown. Although the figure varies daily, approximately 95 of 201 open-hearth furnaces were active in this district's leading plants late last week. For this week, the steelmaking rate may move ahead fractionally to 46-47 per cent. Two additional steelworks blast furnaces were blown in here last week. Jones & Laughlin Steel Corp. blew in a third Eliza furnace and Pittsburgh Steel Co. blew in a Monessen, Pa., stack, the latter having been delayed several days from a scheduled initial operation July 1. There are now 19 out of 53 steelworks blast furnaces active here. Individual rates are as follows: Carnegie Steel Co., 11 out of 32 in the immediate Pittsburgh district; Jones & Laughlin Corp., 6 out of 11; Pittsburgh Crucible Steel Co., one out of two at Midland, Pa.; and Pittsburgh Steel Co., one out of two at Monessen, Pa.

Chicago

Ingot production increased the past week despite the holiday interference, production rising 3 points to 56 per cent. Additional small gains are in prospect this week. With the largest bookings on hand in more than a year, producers anticipate a continuation of recent activity at least during July. Blast furnace schedules are unchanged, 13 of 36 steelworks furnaces being in blast.

Cleveland

Steelworks operations here, including Lorain, averaged 82 per cent last week, unchanged from the week preceding. Twelve units continued active at Lorain; Otis Steel Co. increased the number of its active open hearths from seven to eight; and Corrigan, McKinney Steel Co. increased from 13 to 14, making full capacity for these two interests. However, Corrigan, McKinney company did not produce open-hearth steel July 4. The rate at the close of the week stood at 87 per cent, and will continue this week. Corrigan, McKinney company also will have its fourth blast furnace in production this week.

Youngstown

Steel output in the Youngstown district last week jumped 3 points to 63 per cent of capacity and was expected to start this week at 64 per cent, or slightly higher. Fifty-three of 83 open-hearth furnaces are melting, and bessemer output for three active plants is above 65 per cent. Thirteen blast furnaces are melting, while the rate of ingot output suggests one and perhaps two more stacks will be lighted within ten days.

New England

Ingot operations last week were at the rate of 83 per cent, with no change indicated for this week. Nine of 13 open hearths are operating.

Eastern Pennsylvania

Steelmaking operations in the central eastern seaboard district are fractionally higher, holding at approximately 40 per cent. Unless extremely warm weather prevails, operations for July are expected to surpass those of June, highest in months. The tendency, however, to extend time limits for specifications on some products may relieve the pressure somewhat. On the other hand, some producers may force operations higher than necessary be-

Steel Ingot Production — 1932-33

93.71 Per Cent of Industry Reporting

Gross Tons

1932	Open-hearth	Bessemer	Monthly output companies reporting	Calculated monthly output all companies	No. of working days	Approximate daily output all companies	Per cent operation
Jan.	1,230,907	160,633	1,391,540	1,484,991	26	57,115	26.41
Feb.	1,230,970	157,067	1,388,037	1,481,252	25	59,250	27.40
Mar.	1,149,193	193,944	1,343,137	1,433,337	27	53,087	24.55
Apr.	1,036,163	144,197	1,180,360	1,259,629	26	48,447	22.40
May	950,838	103,593	1,054,431	1,125,243	26	43,279	20.01
June	755,068	100,249	855,317	912,757	26	35,106	16.23
6 Mos.	6,353,139	859,683	7,212,822	7,697,210	156	49,380	22.81
July	653,039	102,916	755,955	806,722	25	32,269	14.92
Aug.	696,122	97,323	793,445	846,730	27	31,360	14.50
Sept.	804,470	124,970	929,440	991,858	26	38,148	17.64
Oct.	885,773	132,876	1,018,649	1,087,058	26	41,810	19.33
Nov.	838,419	128,844	967,263	1,032,221	26	39,701	18.36
Dec.	724,917	81,932	806,849	861,034	26	33,117	15.31
Total	10,955,879	1,528,544	12,484,423	13,322,833	312	42,701	19.75
1933	**96.57 Per Cent of Industry Reporting**						
Jan.	885,743	109,000	994,743	1,030,075	26	39,618	18.23
Feb.	922,806	126,781	1,049,587	1,086,867	24	45,286	20.83
Mar.	784,168	94,509	878,677	909,886	27	33,699	15.50
Apr.	1,180,893	135,217	1,316,110	1,362,856	25	54,514	25.08
May	1,716,482	216,841	1,933,323	2,001,991	27	74,148	34.11
June	2,211,657	296,765	2,508,422	2,597,517	26	99,904	45.96
6 Mos.	7,701,749	979,113	8,680,862	8,989,192	155	57,995	26.68

Figures exclude crucible and electric ingots. Operating percentages for 1932 are based on 67,473,630 gross tons annual capacity as of Dec. 31, 1931; for 1933, on 67,386,130 gross tons annual capacity as of Dec. 31, 1932.

cause of the likelihood of an early increase in wages.

Buffalo

Following a gain of 6 points in the steel operating rate last week to 54 per cent, a further increase of 11 points to 65 per cent is indicated this week. Bethlehem is operating 16 open hearths, Republic 5 and Wickwire-Spencer 2, an increase of one each by the latter.

Birmingham

With five open hearths on at Ensley and eight at Fairfield, of the Tennessee Coal, Iron & Railroad Co., and five of Gulf States Steel Co. on at Gadsden, the steel rate went up to 75 per cent last week.

Wheeling

Steel ingot operations in two important plants in the Wheeling, W. Va., district gained 4 points last week to average through the week at 90 per cent. Three more open hearths were scheduled at one plant. There are 30 of 33 open hearths on and the prospect is for this week that 90 per cent operations will continue.

Canada Also Turns Corner

The wave of improvement in the iron and steel markets in the United States is washing over into Canada. May statistics for the Dominion just released indicate widespread improvement. Dominion Steel & Coal Corp., Sydney, N. S., will provide 200,000 man days of work in rolling 50,000 tons of rails for the Dominion government. Marked improvement also is reported in the hardware trade.

Iron Output Best In Two Years

PIG iron production in June totaled 1,264,953 gross tons and established an average daily rate of 42,165 tons, according to complete returns from operating blast furnaces. These figures are insignificantly higher than the estimate presented in the July 3 issue of STEEL.

Active furnaces, however, totaled 90 on the last day of June, instead of 89 as previously reported. This was an increase of 29 over the 61 making iron on May 31.

The 42,165-ton daily rate of June was a gain of 13,381 tons, or 46.4 per cent, over the 28,784 tons produced in May, and was the highest since July, 1931, with 47,170 tons.

Total output with 1,264,953 tons was 372,627 tons, or 41.7 per cent, better than the 892,326 tons of May. This output was the best since August, 1931, with 1,279,205 tons.

For the six months of 1933 ended in June, production has aggregated 4,444,750 tons, against 5,164,520 tons for the corresponding period of 1932, and 11,098,122 tons in 1931.

Relating production to capacity, operations in June were at the rate of 30.5 per cent, against 20.9 per cent in May and 15.1 per cent in April.

The 90 blast furnaces operating on June 30 was the largest number since June, 1931, when 91 were active. During the month, no furnaces were blown out or banked. Of the 29 stacks resuming operation, only 2 were of merchant classification and 27 were of nonmerchant or steelworks classification.

Furnaces blown in during the month were: In Ohio, Youngstown C and one Hubbard, Youngstown Sheet & Tube Co.; Ohio No. 3, Carnegie Steel Co.; Lorain No. 1, National Tube Co.; Canton, Republic Steel Corp. In Pennsylvania: Cambria E, F and H, Bethlehem Steel Co.; Edgar Thomson F and I, Duquesne Nos. 3 and 4, Carrie Nos. 1 and 2, Carnegie Steel Co.; National No. 2, National Tube Co.; one Aliquippa, Jones & Laughlin Steel Corp. In New York: Lackawanna F, Bethlehem Steel Co.; Niagara A, Tonawanda Iron Corp. In Maryland. Maryland A, Bethlehem Steel Co. In West Virginia: Riverside,

(*Please turn to Page* 54)

AVERAGE DAILY PRODUCTION

	1933	1932	1931	1930
Jan.	18,348	31,336	55,337	91,573
Feb.	19,752	33,122	61,114	101,640
Mar.	17,484	31,194	65,448	104,930
Apr.	20,786	28,524	66,986	106,371
May	28,784	25,282	64,355	104,564
June	42,165	20,867	54,599	97,817
July	.....	18,394	47,170	85,110
Aug.	.....	17,035	41,264	81,455
Sept.	.....	19,788	38,947	75,893
Oct.	.....	20,795	37,831	69,851
Nov.	.....	20,858	36,727	62,182
Dec.	.....	17,650	31,625	53,732
Av.	24,556	23,699	50,035	86,141

MONTHLY PIG IRON PRODUCTION

	1933	1932	1931
Jan.	568,785	971,437	1,715,443
Feb.	553,067	960,550	1,711,192
March	542,013	967,015	2,028,906
April	623,606	855,734	2,009,582
May	892,326	783,769	1,995,001
June	1,264,953	626,015	1,637,998
T'l 6 mo.	4,444,750	5,164,520	11,098,122
July	.....	570,222	1,462,270
Aug.	.....	528,105	1,279,205
Sept.	.....	593,640	1,168,436
Oct.	.....	644,648	1,172,781
Nov.	.....	625,753	1,101,820
Dec.	.....	547,179	980,377
Total	.....	8,674,067	18,263,011

JUNE IRON PRODUCTION

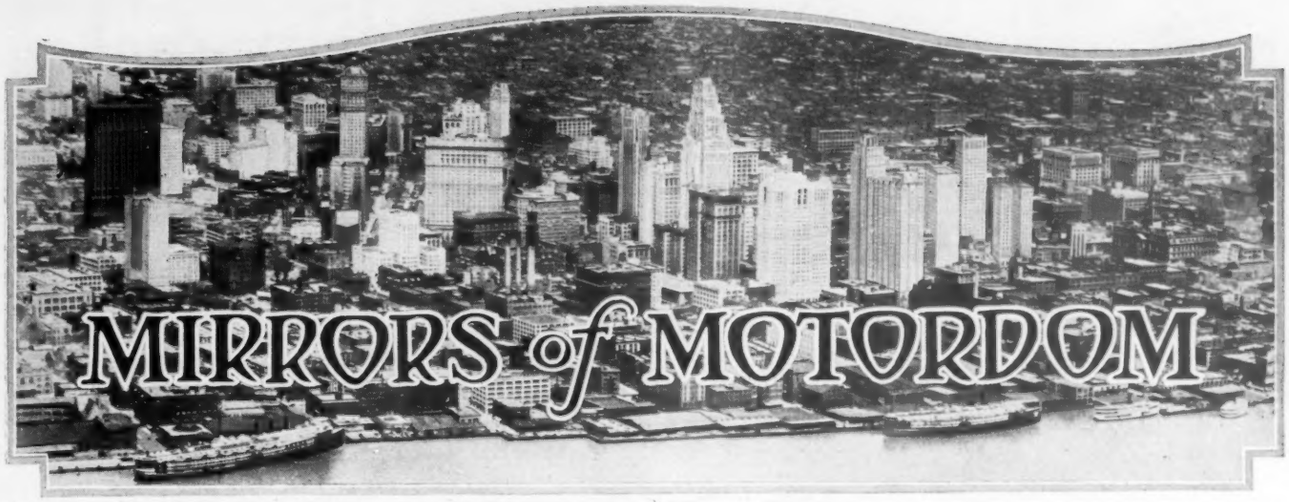
	No. in blast last day of month June	May	Total tonnage Merchant	Nonmerchant
Ohio	24	19	24,066	380,803
Penna.	30	19	38,030*	343,008*
Alabama	7	4	43,779	22,729
Illinois	7	5	17,529	93,109
New York ..	4	2	2,315	32,113
Colorado	0	0		
Indiana	7	5	1,802	180,065
Maryland ..	3	2		
Virginia	0	0		
Kentucky ..	1	0		
Mass.	0	0		
Tennessee...	1	1		
Utah	1	1	5,835*	80,570
West. Va....	3	2		
Michigan ...	2	1		
Minnesota..	0	0		
Missouri	0	0		
Total	90	61	132,556*	1,132,397*

*Includes ferro and spiegeleisen.

Operating Rate of the Steel Industry, by Weeks

All figures except the monthly open-hearth and bessemer ingot totals of American Iron and Steel institute are percentages. Estimates are based upon reports from Pittsburgh, Chicago, Youngstown, eastern Pennsylvania, Cleveland, Birmingham, Buffalo, Wheeling, Worcester and Detroit districts, which are weighted. Weeks end Saturday.

1932	1st Week	2nd Week	3rd Week	4th Week	5th Week	Steel's Average	Institute's Monthly Total tons	Institute's Monthly Average
Jan.....	22	25	26	27	28.5	25.7	1,484,991	26.41
Feb.....	28.5	27	25	25	....	26.4	1,481,253	27.40
March....	25	25.5	24.5	23	....	24.5	1,433,337	24.55
April.....	23	22	22	23	24	22.8	1,259,629	22.40
May.....	24	24	25.5	23	....	24.1	1,125,243	20.01
June.....	21	17	17	17	....	18.0	912,757	16.23
July.....	14.5	12	15.5	16.5	16.5	15.0	806,722	14.92
Aug.....	14.5	14.5	15.5	14.5	....	14.7	846,730	14.50
Sept.....	13.5	15.5	15	17	....	15.3	991,858	17.64
Oct.....	18	19	19.5	19.5	19.5	19.1	1,087,058	19.33
Nov.....	21	21	19	17.5	....	19.6	1,032,221	18.36
Dec.....	16	15	14	12	13	14.0	861,034	15.31
1933								
Jan.....	15.5	17	18	19	....	17.4	1,030,075	18.23
Feb.....	19	19	19	17	....	18.5	1,086,867	20.83
March....	15	13.5	15	14	15.5	14.6	909,886	15.50
April.....	17.5	20.5	25	29	....	23.0	1,362,856	25.08
May.....	33	36	40	43	....	38.0	2,001,991	34.11
June.....	47	48	49	51	54	49.8	2,597,517	45.96
July	55	....	....	....	....	....	.....	.....



Soft Pedal New Model Talk

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To Revive Art of Selling

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Young Buyers Boost Market

DETROIT

ONE result of the brisk retail market for automobiles, which enabled June production to smash precedent by exceeding May and is assuring a July about on a parity with June, is to discourage talk of new models.

So long as present models are moving well, there is an inclination to let them alone. Especially is this true of the medium and high-price cars, which lagged behind low-price models and only recently began participating proportionately in the market.

Some plans for early fall changes have now been abandoned. A few weeks ago tool and die shops expected some work which usually develops in September to mature 30 to 45 days earlier than usual, but indications now are that this will not be borne out.

There will, of course, be the usual transition from 1933 to 1934 models later in the year, but even here the prospect is that changes will be fewer than in any of the past three years. The industry sees an opportunity to economize on costly tool and die work and recoup some of its losses, so long as present models appear to satisfy.

Auburn recently displayed plans for new models to E. L. Cord, but they have been put in abeyance. Studebaker engineers also are ready with changes, but an immediate decision from the receivers is not likely. Packard also has postponed action on new models.

Graham, whose July schedule is nearly 500 greater than its June output of 1450 units, is considering some body changes, including wider doors, a lengthening of the hood to virtually eliminate the wide cowl, and about a 2-inch extension of the front fenders at the running board.

DeSoto standard models have been toned up with the adoption of trumpet horns, new headlights, larger tires and some mechanical changes slightly increasing the power of the engine. The matter of putting an automatic gearshift on some Chrysler models is not yet settled, apparently.

Ford, as usual, is an enigma. Plans for a light four, six and eight are understood to be ready for quick production, but a change is not probable until fall, after harvest time energizes the rural market. The report is now current that Ford of Canada will market a model, priced under $500, this fall.

THE automobile industry is making progress slowly in drafting a code under the national industrial recovery act. Having complied with the spirit of the act by advancing wages 5 per cent and affording greatly increased employment, it is proceeding cautiously with the letter.

This is due, for one thing, to the labor situation. There is reason for believing that the administration at Washington is just as anxious for the co-operation of the industry as one of the five "key" ones as the industry is to retain its open shop status. The next move may be contingent on some tacit agreement on unionization.

It is noteworthy of the united front of the industry that Ford is participating in discussions, being represented along with General Motors, Chrysler, Graham and International Harvester on a committee named by Alvan Macauley, of Packard. A recent Ford ad, in a "you and I" vein, was directed to labor and recalled Ford's leadership in higher wages and shorter days and work weeks.

At least one of the largest manufacturers of automobiles is operating on a policy of no advance in retail prices during the life of current models, which would be almost through the remainder of the year. The tense competitive situation, especially in the low-price field, may result in most other manufacturers taking their cue from this.

Austin, however, recently raised its prices $10 to $20 a model, concurrently with adopting an 8-hour day, 5-day week and higher hourly rates at its Butler, Pa., plant. The business coupe now is $285, standard coupe $315 and deluxe coupe $335. Austin sales have been injured recently by the sharp cut in the price of the smaller Willys, which in size is a compromise between the Austin and so-called standard cars.

One effect of the recovery act will be a new brand of salesmanship in iron and steel. As prices tend to level off, quality and service will become greater factors and sales forces are preparing to graduate from order takers to real sellers. The tendency of buyers, as prices rise, is to shift tonnage from one supplier to another to try to ferret out a weak spot, and a more united front among sellers also is a possibility.

JULY appears to be disregarding seasonal factors with as much zest as May and June. Whatever changes have been made in schedules thus far in the month have been entirely in the way of increases.

A week ago it appeared that July might show a recession from an estimated 250,000 units for June; now it looks like a parity, and there is even a chance that July may top June. It needs to be remembered, however, that with five Sundays and July 3 and 4 out, July has two fewer working days than June.

Chevrolet, which opened on a 65,000-unit schedule, has stepped up beyond 70,000. Its program for bodies this month is 90,000. With other General Motors units at least up to schedule, the General Motors

total now is increased to 95,000.

Ford is holding at 2500 a day, with 60,000 still a good estimate of its output this month. Part of this improvement over June is increased sales, part is anticipating of an August shut-down, which may vary accordingfi to the state of the market.

Chrysler continues on a basis of about 40,000 for Plymouth, 12,000 for Dodge and more than 5000 for both Chrysler and DeSoto, with the month's total probably not far short of 60,000, representing an increase of possibly 5000 over June.

AUTOMOBILE executives ascribe to young people considerable credit for the recent improvement in demand.

Many young persons—especially young married couples—who normally would have purchased cars in the past three years but were prevented by low income or a sense of insecurity are now buying.

Sport and convertible jobs in particular have benefited. Hudson-Essex, for example, points out that 4 per cent is the normal percentage for convertible coupes, yet 10 per cent of Essex Terraplane shipments in June were convertible coupes.

It has also ceased to be bad taste to flaunt a new car, and bragging about the age of a car is passing.

Delco-Remy permanent mold foundry, which supplies at least 5 castings for every General Motors car and some for outside manufacturers, has been operating six out of 7 circular units two shifts a day, producing a million gray iron castings a month. . . . National Steel Co., Hamilton, Ont., has booked an order for bodies for Ford of Canada. . . . Not long ago Packard and Studebaker took bids on their motor blocks from outside foundries, but kept the business in their own foundries. Studebaker also was figuring on closing its forging shop at South Bend, but bids were too high. Campbell, Wyant & Cannon, at Muskegon, obtained the chief parts business farmed out recently—Ford blocks. . . . Production of 218,171 passenger cars and trucks in the United States in May was erroneously ascribed to June in last week's issue, page 15.

Sales Tax Hits Iron, Steel

Indiana state authorities have taken the position that sales made by manufacturers and wholesalers direct to consumers, thereby affecting the iron, steel and machinery industries, are taxable under the new Indiana sales tax law at 1 per cent of the gross. It has also been ruled that interstate shipments are taxable at one-fourth of 1 per cent. A suit has been filed at the instigation of the Indiana Manufacturers' association to attest the matter.

Died:

LOUIS C. HIRSHHEIMER, 54, president, L. C. Hirshheimer Inc., LaCrosse, Wis., manufacturing gray iron castings, June 29. He was general superintendent of the foundry of the LaCrosse Plow Co. for many years, resigning in 1926 to establish his own plant. He also designed a number of important foundries in the Middle West, including that of the General American Tank Car Corp. at Chicago. Mr. Hirshheimer was a member of the American Society of Mechanical Engineers and active in Masonic affairs.

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John G. Burns, 68, president of the Fleming Tank Co., Pittsburgh, at Pittsburgh, July 4.

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Charles H. Lembcke, 51, vice president, All-Steel Equipment Locker Co., Aurora, Ill., July 2, at his home in that city.

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Walter H. Penfield, 60, vice president and comptroller, Colt's Patent Fire Arms Mfg. Co., Hartford, Conn., June 27.

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Emory O. Penry, 49, vice president and general manager of production, Auburn Automobile Co., Auburn, Ind., July 2.

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C. T. Mayfield, 53, for 30 years an employe of the Tennessee Coal, Iron & Railroad Co., Birmingham, Ala., and for the past 14 years traffic manager, July 2.

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Joseph Hyman, original partner of Hyman-Michaels Co. Inc., Chicago, dealer in iron and steel scrap, July 5, at Washington. He retired from active business ten years ago.

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Lewis Pfeiff, 63, New York, vice president and director of the Isthmian Steamship Co., New York, and a director of the United States Steel Products Co., June 28.

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Emil W. Simon, 61, general superintendent of the Van Brunt Mfg. Co., Horicon, Wis., farm machinery, June 27. He was associated with the Van Brunt company 45 years.

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George Fay Sr., 76, formerly owner of a machine shop in Altoona, Pa., June 22. A son, Archie W. Fay, has been continuing the business since his father's retirement several years ago.

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A. G. Lindberg, 63, general manager, U. S. Foundries Inc., Denver, June 29. Formerly he was plant superintendent for the Stearns-Rogers Mfg. Co., Pueblo, Colo., going to Denver as plant manager for the General Iron Works and in 1930 joining the U. S. Foundries.

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Samuel S. Morton, 64, vice president and general manager of Bovaird & Seyfang Co., Bradford, Pa., pipe and other oil well supplies, at Ingram, Pa., July 2. He was formerly connected with Ireland & Hughes, also an oil well supply firm.

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Herman G. Hetzel, 59, treasurer of the Pittsburgh Generator Co., secretary of the Stender Coppersmith Co., and a director of the Troop Water Heater Co., all of Pittsburgh, at Pittsburgh, July 2. He was a member of the Pittsburgh Stock Exchange and active in the brokerage business there since 1923.

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William A. Williams, 64, assistant vice president, American Car & Foundry Co., New York, June 27. He was formerly district sales manager for the Missouri Car & Foundry Co., St. Louis, prior to its acquisition by the American Car & Foundry Co. During the war he was identified with his company's Washington office.

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Karl Peterson, 67, president of the Crescent Tool Co., Jamestown, N. Y., and active in civic affairs in Jamestown and vicinity, June 20. Born in Sweden, he went to Jamestown in 1886, 16 years later entering into partnership with J. P. Danielson for the manufacture of small tools. In 1907 he purchased the interest of Mr. Danielson and incorporated the Crescent company.

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Arthur J. Mason, 76, retired member of the Chicago engineering firm of Hoover & Mason, and known through the Great Lakes region for the Hoover & Mason iron ore unloader, at Flossmoor, Ill., June 28. During the last 15 years of his life Mr. Mason had devoted much of his attention to agricultural problems. During the World war he was connected with the United States shipping board.

Form Electric Metal Guild

The Electric Metal Makers guild, an association for the exchange of technical information, has been formed by a group of electric furnace operators as individuals. H. B. Schulz, superintendent electric steel department, South works, Illinois Steel Co., Chicago, is president. Other officers include: Vice president, A. E. Kayes, International Nickel Co., Huntington, W. Va.; secretary-treasurer, Joseph A. Scott, Driver-Harris Co., Harrison, N. J. Applications for membership should be made to Mr. Scott at his home address, 166 Tappan avenue, Belleville, N. J.

Industrial Men in the Day's News

Alden C. Cummins, General Superintendent, Duquesne Steelworks, Carnegie Steel Co.

PITTSBURGH born, he is a graduate of Lehigh, and started his business career at East Pittsburgh.

IN 22 years he has risen from draftsman to head of the Duquesne plant. He became assistant general superintendent last June.

HIS specialty is electrical engineering; he has developed transmission systems between Steel corporation plants in the Monongahela valley.

THE new general superintendent of the Duquesne steelworks and blast furnaces of the Carnegie Steel Co., Pittsburgh—Alden C. Cummins—is a man of intensive training and experience in the electrical engineering phases of the iron and steel industry.

Mr. Cummins spent some time as director of power distribution for the entire Carnegie company, and until recently had been in charge of all interworks electrical transmission in the Monongahela valley for the Carnegie company's many plants.

He was born in Pittsburgh, July 18, 1887, and after education at Swissvale, Pa., public school and Shadyside academy, Pittsburgh, took a degree in electrical engineering at Lehigh university, Bethlehem, Pa., in 1910. At the latter institution he also studied mechanical engineering and was proficient in mathematics.

Following a short identification with Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., in 1910 and the South Penn Oil Co., Mr. Cummins went with the Carnegie company in 1911 as a draftsman in the electrical department at the Duquesne works. Now, 22 years later, he is general superintendent of that division.

Successively, through varied steps, he has advanced through many divisions of the steel mill, with particular emphasis upon the development and application of electricity in the production of steel.

Much credit is due to Mr. Cummins for the development and operation of transmission systems for electrical energy between the several plants of Carnegie and other subsidiaries of the United States Steel Corp. in and around Pittsburgh in the Monongahela valley.

Aside from being president of the Association of Iron and Steel Electrical Engineers in 1925, he was chairman of the standardization committee for that group in 1926, 1927 and 1928. He is also a member of the Electrochemical society, as well as American Institute of Electrical Engineers and the Engineering Society of Western Pennsylvania.

In June, 1932, he was made assistant general superintendent of the Duquesne works, succeeding Davis C. Burroughs, who resigned in January, 1932. This appointment came at the time of the death of Albert L. Cromlish, general superintendent of the Duquesne works. Since that time, Mr. Cummins has been serving as assistant general superintendent of the division but now is given full charge and responsibility.

He is a resident of Duquesne, is married, and the father of five children. Aside from his membership on the board of education at Duquesne, Mr. Cummins is a member of the Youghiogheny Country club, also a member of Sigma Chi fraternity with which he was associated during his college days.

EDWARD W. FERRY, vice president, is now also treasurer of the Ferry Cap & Set Screw Co., Cleveland, following the recent death of George M. North.

Alva Bradley has been elected to the board of the Ferry company.

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Edgar Stilley has been appointed district factory representative in Maryland, North Carolina and Virginia by the Chain Belt Co., Milwaukee, manufacturer of drive and conveyor chains, power transmission machinery, material handling systems and construction equipment. His headquarters are at 210 Snow building, Baltimore.

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F. S. Markert, works manager, Ferro Enamel Corp., Cleveland, received a post-graduate degree in ceramic engineering this spring from the University of Illinois. Mr. Markert's work was based on experience gained in porcelain enameling practice.

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Benjamin Schwartz, director general of the Institute of Scrap Iron and Steel, New York, and trade relations counsel of other trade associations, has been appointed chairman of the legal committee of New York Trade Association Executives, an as-

(*Please turn to Page* 55)

EDITORIAL

Trends in Steel Industry Are Accentuating Scrap Problem

STEELWORKS operators attending the spring meeting of the open-hearth committee of the American Institute of Mining and Metallurgical Engineers heard a timely warning that the steel industry in the next decade must either give more heed to its sources of steel scrap or dig more deeply into its dwindling reserves of iron ore.

Benjamin Schwartz, director general of the Institute of Scrap Iron and Steel, who issued the warning, presented a strong case for the increasing importance of steelmaking scrap. He cited the greater use of alloys in steel, which prolongs its life and retards its normal rate of return to scrap piles. He touched upon changes in steelmaking practice, the result of which has been a steady increase in the ratio of scrap to pig iron in the charge. He also called attention to losses sustained by the domestic supply of scrap through heavy exports and to reciprocal deals between steel producers and railroads and other important suppliers of scrap. Mr. Schwartz predicted that as a result of these various influences a shortage of steel scrap may be encountered within the next ten years. One way to lessen this danger, in his opinion, is for the steel industry to encourage the collection of cheaper grades of scrap and to develop uses and markets for them.

Changes in Consumption of Steel Make for More Difficult Collection of Scrap

The fact that steelmakers in the past, except at occasional periods of threatened shortage, have been prone to take their scrap sources as a matter of course is ample proof that the subject needs more intensive and more continuous attention. Perhaps steel producers have not realized that many changes in the industry—other than those mentioned by Mr. Schwartz—for years have been retarding the flow of steel from use into scrap piles.

Take, for instance, the single factor of the distribution of steel to consuming industries. The percentage of tonnage going into cars, locomotives, rails, track materials, ships, boilers, tanks, etc.—all articles from which the steel is easily returnable in the form of scrap—has been declining. Meanwhile the proportion of total output going into tin cans and certain other containers, stamped products, and many articles made from sheet and strip steel has been increasing. Steel in light-weight items of this kind is not conveniently collectible or returnable as scrap.

The influence of this trend in steel consumption probably would have been felt more keenly but for the fact that the rise of the automobile industry to maturity brought forth new sources of supply and developed new grades of scrap which in a measure covered up the steady decline in the volume of railroad and other "heavy" scrap.

As time goes on, the distribution of steel will be even more diversified. The proportion of steel going into the so-called miscellaneous fields of consumption has increased appreciably in the past ten years. According to present indications, in the future less steel will go into channels where systematic routine for gathering scrap has been established and more will go into consuming industries where collection either has not been developed commercially or is made difficult by scattered location and small quantities.

Industry Should Not Rely Solely Upon Law of Supply and Demand to Bring Out Scrap

Of course it can be argued that the law of supply and demand always regulates the amount of scrap available. It is true that an increase of 50 cents or more in scrap prices broadens the area in which scrap will be collected for shipment to a given scrap consuming center. But for the long pull it will be inadvisable to depend entirely upon the law of supply and demand. Something better than recurring cycles of shortages and surpluses can be devised to insure ample, continuing sources of supply. A conscientious study of the scrap situation probably would reveal opportunities for developing new sources and for improving existing methods of collection and grading.

As soon as the steel industry looks upon scrap as material ranking in importance with iron ore and fuel, it will take measures to protect its sources more adequately. The first step is to study the problem exhaustively, and in appointing a committee to go into the subject thoroughly the open-hearth executives acted wisely. It is to be hoped that their report will pave the way for definite action by the steel industry in developing new sources of scrap supply.

THE BUSINESS TREND

Most Business Indicators Now Above Levels of 1932

IMPROVEMENT in business has spread so widely that it is difficult to find many barometers of major importance which have failed to equal or rise above 1932 levels.

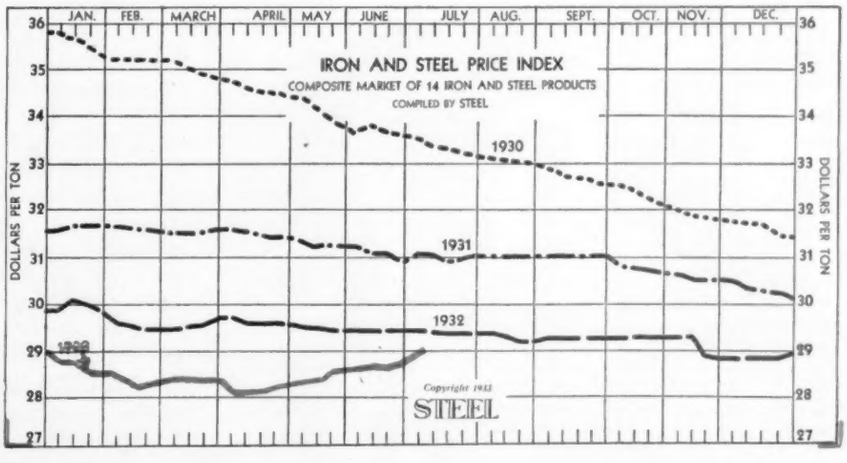
Indexes of business activity and industrial employment are sharply above last year's figures. Output of steel, bituminous coal, lumber, automobiles, etc. is definitely in excess of the corresponding output in 1932. Construction contracts awarded finally have risen to meet last year's curve. Commodity price indexes hold a fair margin over corresponding records for last year. Stock prices have been increasingly higher since April, as also have been bond prices. Even the record of commercial failures shows improvement; in fact the number of insolvencies has been consistently fewer through the first half of 1933 than in the corresponding half of last year.

One noteworthy exception to the general rule is factory employment. While encouraging gains were registered in April and May, the index number for the latter month stands at 60.6 as compared with 62.1 in May last year. Factory payrolls, while likewise gaining in the past few months, in May still were below 1932 levels. Judging from preliminary indications, factory employment in June probably was up 3 or more points from May, therefore it is probable that the index for June will be at least 63—which would be slightly above the 62.1 figure of June last year. This lag of improvement in employment behind improvement in production lends strength to General Johnson's emphasis on jobs and wages.

Threat of Unionization Affects Timing of Present Wave of Wage Advances

The wage problem is further complicated by the interpretation of the national industrial recovery act by union labor chiefs. The wave of wage advances in industry probably is influenced more by the threat of union activities than by the simple justice of advances at this time.

At any rate, an odd combination of circumstances is bringing about certain upward revisions in wages, whereas it will be some time before stockholders generally experience an equal improvement in dividends.

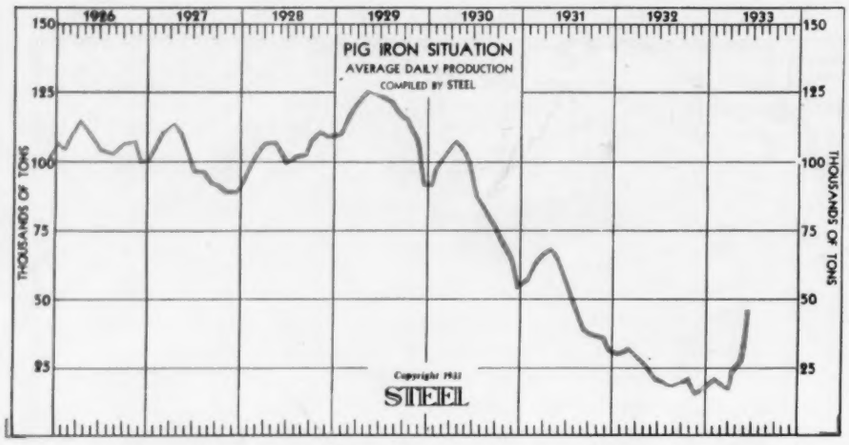


1933

July 1 .....$29.19
June 24 ..... 28.83
June 17 ..... 28.75
June 10 ..... 28.75

1932

July 2 .....$29.52
June 25 ..... 29.52
June 18 ..... 29.52
June 11 ..... 29.56



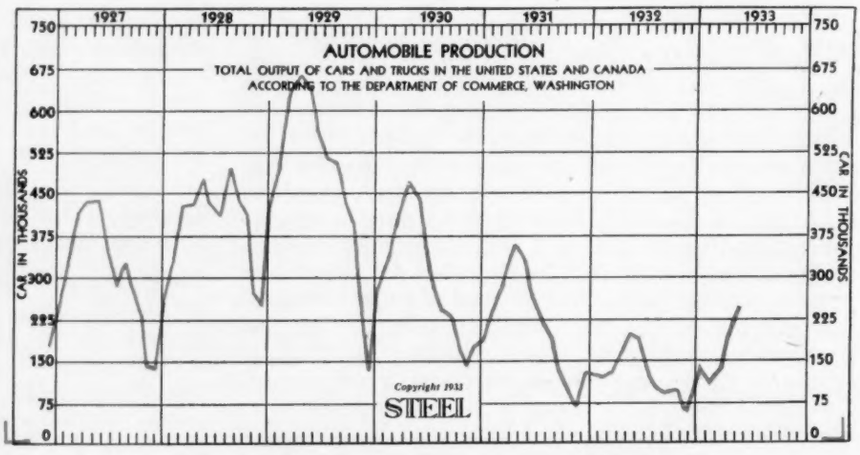
June, 1933	42,050
May, 1933	28,784
June, 1932	20,867

Pig Iron Output Gains 46 Per Cent in May

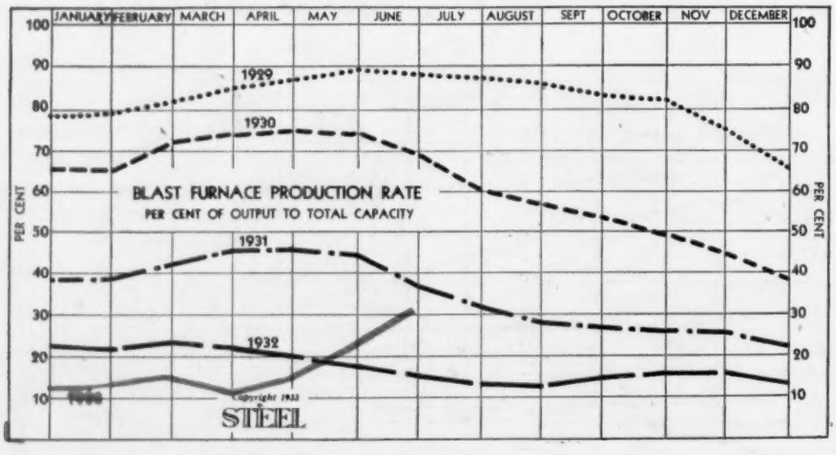
The average daily production of coke pig iron in June was 42,050 tons, an increase of 13,266 tons, or 46.1 per cent, over the 28,784-ton average daily rate of May. This was the highest daily output recorded in almost two years, or since July, 1931, with 47,170 tons. In June, one year ago, iron was made at a daily rate of 20,867 tons, while two years ago the daily output stood at 54,599 tons.

Automobile Production Up Sharply in May

Production of passenger cars and commercial motor vehicles in the United States and Canada advanced sharply during May, rising to the highest level for any month since June, 1931. According to the current report from the United States department of commerce, the May output totaled 227,567 units. This is a gain of 38,645 units over the previous month and compares with 192,516 units produced in May, 1932.



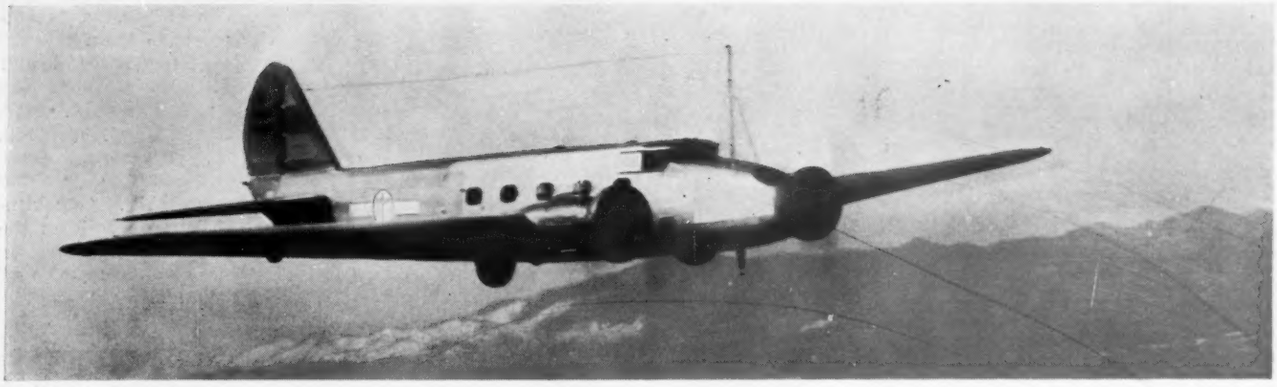
May, 1933	227,567
April, 1933	188,922
May, 1932	192,516



June, 1933	30.5
May, 1933	21.2
June, 1932	14.7

Blast Furnace Operations Up With 89 Stacks Active

With June output of iron exceeding a million tons, 28 blast furnaces resumed operations, raising the active total of 61 on May 31 to 89 on June 30. This is the largest number since June, 1931, when 91 furnaces were on the active list. Relating production to capacity, operations in June were 30.5 per cent, against 21.2 per cent in May, 15.1 per cent in April and 12.7 per cent in March. Since March, production has increased 140 per cent.



Ranked as the fastest multi-engined commercial transport in scheduled service, this new 3-mile-a-minute monoplane cruises along at 171 miles an hour with a full load of ten passengers, their baggage, two pilots, a stewardess and cargo. It is all-metal construction—steel, duralumin and other metals helping to make it outstanding in transport development

ALLOY STEEL SUPPLIES STRENGTH IN 60 SPEEDIEST ALL-METAL TRANSPORTS

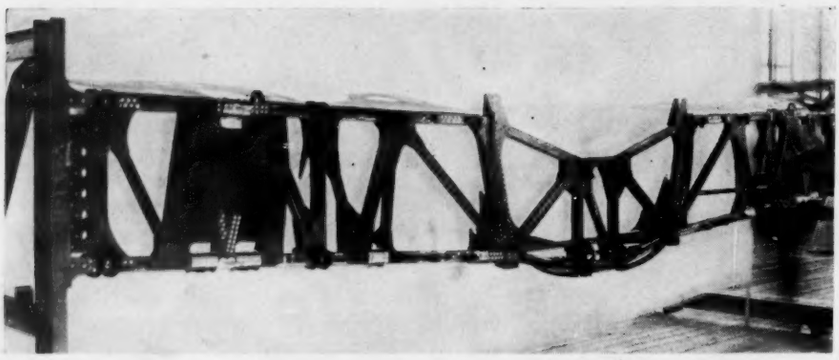
ONLY thirty years ago, Orville and Wilbur Wright made the first successful flight in a powered heavier-than-air vehicle, at Kitty Hawk, N. C. Their plane, a muslin-covered contraption with curved skids for landing gear and with a twelve-horsepower engine, flew 120 feet in 12 seconds. Thus was recorded a startling new chapter in the history of man's conquest of the air.

Today another chapter in that comparatively brief history is being written as new-type, high-speed transport planes take to the nation's airways. Designated as the Boeing 247's, they are claimed to be the world's fastest multi-motored passenger-cargo planes in scheduled service. They are cleanly streamlined, have retractable landing gear, are equipped with two Pratt & Whitney 550-horsepower Wasp engines and they are of all-metal construction.

How steel is being used with other metals to set new standards in aircraft design and construction is revealed in a study of this latest commercial sky carrier. All-metal construction has brought with it new possibilities for streamlining and, hence, speed; new operating economies, by reducing to a minimum the necessity for maintenance and repair; new strength and safety.

The trend toward metal in aircraft manufacture was apparent long before the all-metal

Sixty of these planes are entering the service of United Air Lines, the majority of this number have been delivered and are in service. Coast-to-coast travel has been cut to 20 hours, with similar time reduction on Pacific Coast and other routes



The inboard spar of the new all-metal, low-wing, twin-engined transport plane is built like a bridge to provide maximum strength. The upper and lower spar chords are of S. A. E. 4130 steel heat treated to a tensile strength of 140,000 pounds per square inch

plane arrived. At the plant of the Boeing Airplane Co., Seattle, for instance, "stick and wire" type planes were the order during and immediately after the World war. Engineers, however, were striving for maximum strength with equivalent lightness, and metal gradually came into the picture.

Slowly the transition took place, from wood and fabric to the welded steel tube structure, to the welded steel tube and bolted duralumin structure, to the complete bolted or riveted dural structure and, at last, to the complete metal structure with metal wings. Today both the latest military and commercial Boeing planes are entirely of metal construction.

Briefly, the new transport is metal throughout except for small amounts of plywood in the cabin insulation and flooring. The wing span is 74 feet; length overall, 51 feet 4 inches; and height, 16 feet overall, including radio mast. Carrying ten passengers, two pilots, a stewardess and cargo, the plane has a top speed of 182 miles an hour and cruises at 171 miles an hour. With a gross weight of 12,650 pounds, it takes off in 770 feet, climbs at the rate of 830 feet a minute and attains an altitude of 8000 feet in just ten minutes. Contrasted with its high speed is its phenomenally low landing speed of only 58 miles an hour.

20 Hours Coast-to-Coast

Sixty of these planes are being used by United Air Lines in bringing coast-to-coast travel time down to 20 hours and in shrinking distances to other points of the country. Schedules inaugurated by United in June place San Francisco and New York City only 20 hours apart —a significant development in the nation's business facilities. Similar split-second schedules are provided to the 136 other cities served directly or through connecting services by United.

But to get back to the uses of metal in these new passenger-cargo carriers—steel is used for a variety of parts requiring high tensile strength. S.A.E. 1025 bar, sheet, tube and forgings are used for miscellaneous parts not highly stressed; S.A.E. 2330 bar stock is used both in the heat-treated condition and otherwise for miscellaneous machined and forged parts requiring an alloy steel, such as spar hinge forgings, bolts, and the like; S.A.E. 4130 bar, sheet and tube stock is employed both in the heat-treated condition and otherwise for miscellaneous parts such as retractable landing gear mechanism, landing gear parts, center section spar chords, engine mounts, tail gear, etc.; KA2ST stainless steel is used for the exhaust stacks. Duralumin is the metal chiefly employed for the transports, being used for the internal structure, including longerons, bulkheads and skin stiffeners, as well as for the outer skin covering.

Separate heat treating rooms are provided at the Boeing plant for steel and duralumin. The tensile strength of steel parts going into the new transport is run as high as 180,000 pounds per square inch, while that of duralumin is boosted to 55,000 pounds per square inch.

After the steel is fabricated and heat treated, it goes through the cadmium plating process—an electroplating method which protects the metal from corrosion. From there, it goes through the finishing shop and on to assembly. One hundred per cent inspection follows the material from the time it arrives in raw form until it is ready to take off in the finished plane.

Specifications Detailed

Steel is purchased according to Army Corps Specifications and as received at the factory its minimum physical properties are as follows:

S.A.E. 1025 Bar Stock

Tensile strength, pounds per square inch	55,000
Yield point, pounds per square inch	36,000
Elongation in 2 inches, per cent	22*

*For each 2000 pounds in excess of 55,000 pounds per square inch tensile strength, a reduction in elongation of 1 per cent to a minimum of 10 per cent will be allowed.

S.A.E. 1025 Sheet

Tensile strength, pounds per square inch	55,000
Yield point, pounds per square inch	36,000
Elongation in 2 inches, per cent	22

S.A.E. 2330 Bar Stock

Tensile strength, pounds per square inch	125,000
Yield point, pounds per square inch	100,000
Elongation in 2 inches, per cent	17
Reduction of area, per cent	50
Brinell hardness (10 mm. ball-3000 kg.)	250-300

S.A.E. 4031 Tubing

Wall Thickness up to 0.035-Inch, Inclusive

Tensile strength, pounds per square inch	95,000

The Boeing Airplane Co. maintains a modern machine shop in which steel as well as other bar and slab stock is machined by expert workmen. The workers are required to handle a full range of metals, observing closer tolerances than those followed in the average machine shop

Yield point, pounds per square inch	75,000
Elongation in 2 inches, per cent:	
Full tube	10
Strip	5
Wall Thickness Over 0.035 to 0.186-Inch, Inclusive	
Tensile strength, pounds per square inch	95,000
Yield point, pounds per square inch	75,000
Elongation in 2 inches, per cent:	
Full tube	12
Strip	7
Wall Thickness Over 0.186-Inch	
Tensile strength, pounds per square inch	90,000
Yield point, pounds per square inch	70,000
Elongation in 2 inches, per cent:	
Full tube	15
Strip	10
S.A.E. 4130 Sheet	
Tensile strength, pounds per square inch	90,000
Yield point, pounds per square inch	70,000
Elongation in 2 inches, per cent:	
Thicker than $\frac{3}{16}$ inch	20
$\frac{1}{4}$ to $\frac{3}{16}$ inch	15
$\frac{1}{16}$ to $\frac{1}{8}$ inch	12
Less than $\frac{1}{16}$ inch	10

In the case of S.A.E. 4130, the physical properties of the bar are the same as that of S.A.E. 4130 sheet. In the case of S.A.E. 1025, the physical properties of the bar are the same as those of S.A.E. 1025 sheet and tubing.

In service, the transports are proving a revelation for their features of high performance, strength, passenger comfort and operating economy. Comfort features include a spacious heated and ventilated cabin, upholstered chairs with adjustable reclining backs, dome lights and individual reading lamps, wide windows, lavatory facilities and cabin insulation against both noise and temperature conditions.

As the cabin is complete, so is the pilots' compartment, with virtually every known and proved aid to navigation provided. There are 32 devices on the main instrument board alone, in addition to subpanel, dual controls and two-way radio telephone equipment.

Milk Station Tanks, Oxyacetylene Welded, Are of 18-8 Steel

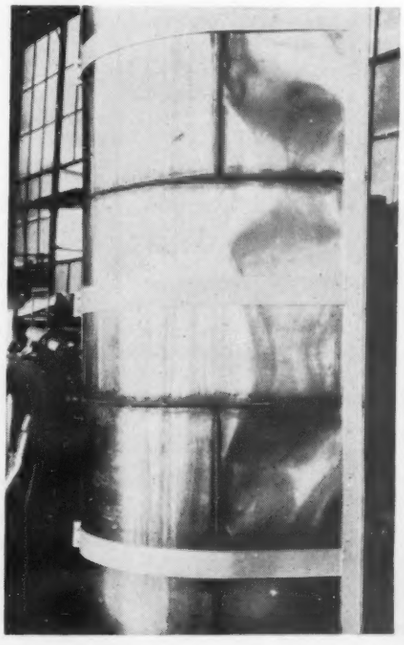
FOOD and dairy industries, among the first to recognize the value of chrome-nickel corrosion-resisting steel, continue to adapt this material to new applications. Hershey Chocolate Corp., Hershey, Pa., is replacing its milk station tanks, formerly of copper tinned with block tin, with oxyacetylene welded 18-8 stainless steel. Material for a second series of these tanks recently was ordered, to be fabricated into tanks of 1000-gallon capacity, some of the first replacements being of 700-gallon capacity.

This type of tank is placed at a milk station in a rural town, farmers delivering their daily supply of milk to the station tank each morning. Later, trucks pick up the milk and deliver it to the chocolate plant the same day. In the case of block tinned copper tanks, it is reported that a tendency for the tin to chip off was noted; because of this adverse feature it was decided to replace the tanks with stainless steel.

Welding Requires Care

Welding of 18-8 steel frequently presents specific problems in certain applications and, while steady progress has been made in welding procedure, certain precautions must be exercised. In the fabrication of these milk tanks, welding procedure was recommended by the Linde Air Products Co., New York, tests revealing that oxyacetylene welded seams effectively eliminated cracks or other small openings prone to occur in some types of joints. Elimination of such defects further precluded the possibility of bacteria lodging therein.

Some trouble was encountered as a result of warping at the seams as the heat of the blowpipe was applied, when the work was first started. An oxyacetylene expert suggested flanging or bending over each edge about 3/16 inch, at right angles to the main sheet for the full length of each section. Flanged edges then were placed together and the welding started at one end, melting down the flanges to form the weld, no welding rod being necessary since molten metal from the flanged edges was sufficient to provide any excess weld metal necessary. This procedure overcame warping trouble and also gave a joint perfectly flush on the inside after the seam was filled with block tin. An appreciable bead remained on the outside, as shown in the accompanying illustration.



Partial view of welded stainless steel tank, adopted by chocolate company for milk collection stations

Flux Collects Oxides

Better results are obtained in welding this type of metal if a flux is used to accumulate the infusible oxides which form as a slag on the surface of the molten metal. These oxides consist chiefly of chromium oxide, together with smaller amounts of iron oxide, manganese oxide and silica. A flux of this type must be sufficiently fireproof adequately to protect the molten metal and hot metal adjacent to the weld from oxidation, as well as being capable of dissolving the refractory chromium oxide with ease. Such a flux, designed especially for use in welding high-chromium steels, is now on the market and is known as Cromoloy, manufactured by the Oxweld Acetylene Co., New York.

A.S.M.E. Names Selections For Officers in 1934

Paul Doty, chairman of the board, Minnesota state board of registration, St. Paul, has been nominated for president of the American Society of Mechanical Engineers, succeeding A. A. Potter, dean of engineering, Purdue university, Lafayette, Ind., the 1933 president.

Selections for the various offices were announced by the nominating committee at the semiannual meeting of the society in Chicago, June 26-29. Election will be held by letter ballot, closing Sept. 26.

Vice presidents nominated are: H. L. Doolittle, designing engineer, Southern California Edison Co., Los Angeles; William L. Batt, president, S K F Industries Inc., New York; Ely C. Hutchinson, president, Edge Moor Iron Co., Edge Moor, Dela.; and Elliot H. Whitlock, Cleveland, formerly research professor of mechanical engineering, Stevens Institute of Technology, Hoboken, N. J.

Nominated for the office of manager are: James M. Todd, consulting engineer, New Orleans; Ernest L. Ohle, professor of mechanical engineering, Washington university, St. Louis; and James A. Hall, professor of mechanical engineering, Brown university, Providence, R. I.

Roller Bearings for New Cold Mill Specially Designed

UNIQUE features of design are incorporated in the bearings for the backing-up rolls of the unusually large cold mill which the E. W. Bliss Co., Salem, O., built recently for one of the large sheet and tin plate manufacturers in the Chicago district. These bearings are 51 inches outside diameter and have a capacity of 6,000,000 pounds at mill speed.

Features of this 84-inch 4-high mill, the housings of which are built of four laminated, electrically-welded, forged steel plate links, 31 feet 10 inches high, 10 feet 3 inches wide and 2 feet 8 inches thick, were described in the Feb. 13, March 13 and May 29 issues of STEEL.

Two-Row Taper-Type Bearings

The bearings, one of which is shown in the accompanying illustration, were manufactured by the Bantam Bearing Co., South Bend, Ind., and are of the two-row taper-type with surface contact between the heel of the rollers and race, thereby having a wide band of contact. A rigid one-piece lubricating-type of bronze cage is used with the roller pockets carefully cast and the roller contacting pads machined accurately to provide perfect alignment of the rollers during the unloaded period of rotation.

In the case of these taper roller bearings and straight roller bearings with lipped races, the lips are ground accurately, which, with the rigid accurate cage insures alignment of the rollers coming into the loaded sector of the bearing. The load carried by a bearing is concentrated within approximately an 82-degree sector so that the rollers within this sector carry the entire load and during the unloaded portion of rotation, the rollers unless accurately guided will tend to skew and misalign.

By means of a special method, the Bantam company obtains concentricity, accuracy and precision dimensional sizes of bearing races. Each race is ground on the sides, clamps are soldered to one side and ground to perfect flatness after which the race is mounted for grinding, by bolting the race clamps to the face plate of the grinding machine. These clamps are so arranged that the inside diameter and outside diameter of the race are unobstructed at all times and are ground across their entire width without changing the set-up. The outside diameter is first rough ground, then the inside diameter, and finally the race is finished by a series of successive grinding operations.

Grinding both diameters at the same setting produces absolute uniform wall thickness. With this method, the race also is free to adjust itself to any warpage which occurs. Adjustment is further aided by slightly relieving the tension of the clamp bolts after each successive grind. This freedom of the race to expand or contract during grinding insures concentricity and roundness and also allows dimensional tolerances to be held accurately.

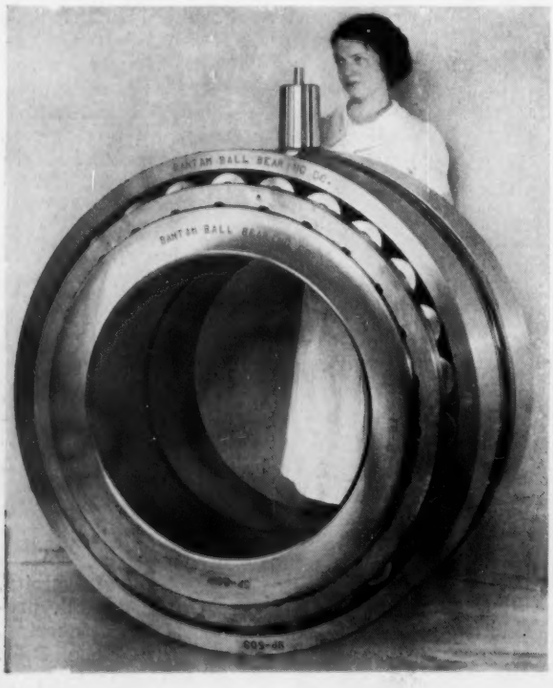
These bearings are made from high-carbon, high-chrome electric alloy steel with a hard, tough outer surface with a gradual decrease in hardness toward the center of the rollers and races. The core is softer than the hard outer surface, yet has great strength and resistance to shock.

Differential Hardening Used

High hardness is required at the surface of rollers and races as only a small number of fibers actively carry the load. As the cross-section is progressively penetrated, the number of active fibers increases and as the hardness of high-carbon steel gradually decreases there is always a sufficient number of active fibers to support the load.

By a process of masking any desired surfaces to prevent complete quenching in the hardening operation, great toughness is produced in any section that would ordinarily be liable to cracking either in quenching or due to the bending and shock stresses in service. This process is called "differential hardening" and permits the use of higher hardness on the roller paths without danger of cracking or breaking because those portions of the bearing which are ordinarily the weakest are made the toughest and strongest.

Hardening and heat treating is done is a battery of all electric furnaces equipped with the latest automatic, pyrometrically-controlled apparaus. Many unusual processes are employed in fabricaing these large bearings.



ROLLER bearings to be used on the backing-up rolls of the new 84-inch 4-high cold mill are 51 inches outside diameter and have a capacity of 6,000,000 pounds at mill speed. They are of the two-row, taper-type and are made of high-carbon, high-chrome steel possessing unusual toughness and hardness

Preparing Shafts For Metal Coating

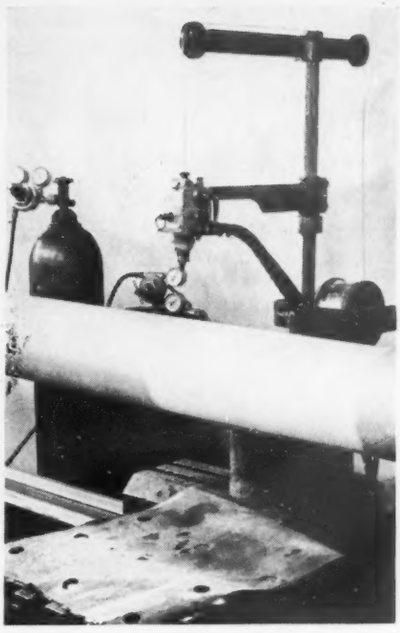
IN CONNECTION with the preparation of surfaces for sprayed metal coatings (STEEL, April 17, p. 26), the Metallizing Co. of America Inc., 1218 Long Beach avenue, Los Angeles, points out that when the roughening treatment is used on shafts—that is, when the shaft is knurled or given a fine thread cut—it is wholly unnecessary to sandblast the surface.

The sandblasting treatment, in this type of work, has two properties which are necessary to the proper preparation of a surface for metal spraying: Thorough cleaning of the surface to present a base of pure metal; and a slight roughening so that particles of the spray can lock themselves into the base material and form a strong mechanical bond. Thus,

when a knurling or fine thread cut is taken upon a shaft, both of these conditions are met.

Though this may seem a relatively minor point, the Metallizing company claims that a number of sales of spray equipment have depended directly upon whether or not sandblasting was required on the material to be coated. Many companies have lathe equipment and can readily turn shafts which it is contemplated coating, but comparatively few plants have adequate sandblast equipment. Furthermore there is disinclination to use the latter equipment near lathes, because of the fear that sand will become embedded in lathe bearings with consequent destructive effect.

In actual practice with a lathe, the shaft is set up as shown in the accompanying illustration and a rough tooling cut made; then the metallizing spray gun is mounted directly upon the traveling bed of the lathe, turned on, and then passed back and forth over the shaft by means of the feedscrew, until the desired thickness is built up. It is claimed to be unnecessary to remove the shaft from the lathe between the two operations.



Metal-spray coating a shaft mounted in a lathe, after the surface has been prepared by rough tooling

Interlocking Sheet Piling Guards Fog Signal Station from Heavy Seas

ANCHORING the site of a fog signal station facing the stormy Pacific at Westport, Wash., entrance to Grays harbor, by means of steel sheet piling is an unusual engineering job which has just been completed. Results are reported to have met with the full approval of the engineers of the government lighthouse service for which the work was carried out.

The problem confronting the service was the increasing danger of undermining the signal station structure. It is located on a long, wide, shifting sand beach on the ocean from which heavy swells are constantly hurled. The fog signal is of great importance to the heavy shipping entering and leaving Grays harbor.

Piling Encloses Area

After careful study engineers decided to drive steel sheet piling entirely around the station, closing in an area 100 x 100 feet. Sand was dumped inside the enclosure and the piling was tied back into a solid reinforced concrete slab entirely covering the enclosed area. This gave protection against the high wave action so frequently present and prevented washing out the material behind the piling. Incidentally by extending the slab out beyond the top of the piling, a pleasing coping effect was produced, as shown in the accompanying illustration.

The piling section adopted was Lackawanna AP 16, supplied by Pacific Coast Steel Corp., Seattle, subsidiary of Bethlehem Steel Co. This section is designed with a reversed interlock which puts all the webs in the same plane. The piling is gaged to stand a strain of 6000 pounds per inch at the interlocking joints. The engineers specified copper bearing steel, coated with one coat of asphalt base tar paint at the mill and then painted one coat of a steel gray paint on the portion remaining above the ground line after driving.

The contractor encountered several large logs while driving the sheet piling but in each case was able to drive through them. Depth of drive was about 15 feet.

The project was designed by the seventeenth district lighthouse engineers, with headquarters at Portland, Ore. Contract was awarded to Grays Harbor Construction Co., Hoquiam, Wash.

Interlocking sheet piling of copper-bearing steel, surmounted by a thick concrete slab, forms a strong foundation for this West Coast fog signal station

Impact Molding Material Is Resistant to Shock

A new product, called impact molding material because of its superior mechanical characteristics, has been introduced by the Bakelite Corp., 247 Park avenue, New York. This material is a tough substance claimed to have several times the shock resistance of ordinary molding material.

In many respects it is similar to bakelite laminated products, but differs in that it can be molded and is therefore adaptable to a wide range of shapes. It consists of fibrous materials processed with bakelite resinoid and finished parts made from it have an attractive surface finish.

Recommended practice for gear purchasers, giving in detail the information required by manufacturers from buyers of bevel, helical, herringbone, spiral, spur and worm gearing, has been issued by the American Gear Manufacturers association, through the secretary, J. C. McQuiston, First National Bank building, Pittsburgh.

Open-Hearth Operators Start Plant Rehabilitation

OBTAINING supplies and equipment to rehabilitate open-hearth furnaces which have been robbed of equipment during the many months of shut-down is a major problem facing all open-hearth operators in the United States. This fact was brought out by Chairman L. F. Reinartz in opening the sixteenth semiannual meeting of the Open-Hearth committee of the American Institute of Mining and Metallurgical Engineers, in Chicago, June 29. Through a combination of circumstances, he stated, business has improved to a marked extent and if the present advancement continues, the committee will return to its original plan of having two meetings a year, beginning in 1934.

Results of an investigation of nozzles and stopper rod assemblies were presented by H. V. Beasley, industrial fellow, Mellon Institute of Industrial Research, Pittsburgh. For obtaining the best pouring practice with graphite stopper rod assemblies, the speaker mentioned that the ladle well should be large enough to prevent the metal from chilling around the stopper. Nozzle and stopper should be designed properly for minimizing dribbles and should seat perfectly.

Slowly drying the ladle well will prevent the nozzle from cracking, Mr. Beasley pointed out. The size of the stopper should be proportional to the amount of steel poured, and better service can be obtained, from a refractory standpoint, with stoppers of higher graphite content. Proper design of male stoppers and bottom sleeves also is important. A refractory and low shrinkage mud should be used between the sleeves and the assembly should be dried before placed in service.

Low-Carbon Steel Preferable

The speaker emphasized that at least 1/16-inch per foot of sleeves should be allowed for sleeve expansion. Bolts for ordinary stoppers should be approximately 1¼ inches diameter and made from low-carbon steel, preferably 0.05 per cent; it is advisable to use them only once when pouring large tonnage heats. The bolts should fit snugly in the rods and stopper. The bolt should be keyed to the rod with heavy low-carbon keys. The best results are obtained, the speaker pointed out, when the stopper is in contact with the rod end.

For medium and large tonnage heats, 6-inch sleeves and 2-inch rods are preferable. The proper plug mixture is highly essential, the speaker emphasized. The depth of undercut of the stopper bolt should be 55 to 60 per cent of the stopper diameter.

In discussing what effect high-manganese steel has on stoppers and nozzles, one operator mentioned that in pouring 15 per cent manganese steel he aims to have a shallow well and the stopper rigging arranged so that the stopper is up to get away from the swirl of the steel. To avoid leakage, another operator tapers the ladle nozzle 1 inch on the face down to ½-inch on the neck. He notices in pouring high-manganese heats that the ½-inch hole of the neck is cut to 1 inch.

Reduces Skull Thickness

One of the advantages of insulated ladles is the formation of thin skulls, according to one open-hearth superintendent. He stated that the insulation is applied in the form of a cement and that the insulated ladle has a thinner lining than is found in ordinary ladles. The furnace is tapped at the same temperature when using insulated ladles as when using the ladles of conventional construction.

In discussing the advantage of equipping ladles with two stoppers, most operators who use ladles of this design, mentioned that the pouring time is reduced at least 50 per cent. The use of two stoppers prevents the heat from dropping at least 100 degrees in temperature from the time pouring begins until pouring is completed.

Combustion control for open-hearth furnaces by means of products of combustion or oxygen combustion control was discussed by a superintendent of an open-hearth shop. By means of charts he showed a continuous record of oxygen in the waste gas from the exit port on heats in which combustion was controlled by hand using predetermined fan speeds for metered gas flow setting. The charts depicted the maintenance of a rather irregular analysis.

Another set of charts showing the same record of heats on which combustion was controlled by hand settings, determined from the chart itself, indicated a high degree of perfection. A third set of charts obtained while operating the open-hearth furnace with automatic combustion control in which the ratio of air to gas is maintained by that means with no reference to the chart, indicated that the oxygen content in the waste gas is well controlled. A fourth set of charts depicted automatic control but reference was made to the charted oxygen analysis and the ratio varied by the first helper, indicated an improvement over the foregoing methods.

The speaker mentioned that hand control with the use of measuring instruments and flow indicators is better than without. Automatic control is better than hand control, but the relative value of any of these methods must be determined based upon cost, dependability and relative accuracy, he emphasized.

The most economical condition, the speaker explained, can be determined for any open-hearth furnace and then should be held closely as control method used will permit. The economic value of oxygen control over ratio control is yet to be proved, but as combustion controls are used, it seems to be a step forward. In the speaker's opinion, however, oxygen control still is to be perfected so that it can be used and its value determined.

Better results from automatic equipment for controlling open-hearth furnaces are obtained when the first helper watches the charts, one open-hearth superintendent contended. His practice is to keep the oxygen low because of high superheat. Best results are obtained when the oxygen content is maintained between 1½ to 3 per cent, according to the practice at one open-hearth shop. At this particular plant, air control equipment was installed on one furnace and since its installation, the savings on an annual basis have amounted to $10,000. The savings at this particular plant have amounted to 500,000 B.t.u. per ton and were predicated on 30 cents per 1,000,000 B.t.u. Another operator mentioned that in his plant five open-hearths are under ratio control and that the savings effected from the standpoint of refractories is highly attractive.

Contemplates Scrap Shortage

The increased use of alloys in steel, the higher percentages of scrap in open-hearth charges, the exportation of large tonnages of scrap metal, and, transactions bordering on reciprocity were cited by Benjamin Schwartz, director general, Institute of Scrap Iron and Steel, New York, as factors which will contribute to a shortage of scrap steel within the next ten years. He mentioned that the steel executives made a serious mistake by permitting the price of scrap to go as low as it did in 1932 inasmuch as the sources of supply dried up, the collection machinery disintegrated and a large tonnage of scrap was lost.

Mr. Schwartz contended that there exists in this country only six week's supply of prepared scrap based on

present operating conditions. Approximately 1,000,000 tons is in the yards of dealers and 500,000 tons in the yards of steel mills.

Specifications and prices of scrap have no relation today to the real value of scrap, Mr. Schwartz emphasized. The cheaper grades and specialties, he pleaded, should be stabilized at a differential in value in relation to melting steel, in accordance with their yield. In conclusion, the speaker made it plain that the steel industry must either dig further into its iron ore reserves or must encourage the collection of the cheaper grades of scrap and develop uses and markets for them.

Approximately 10 per cent more scrap is being used in open-hearth charges at present than was used before the depression. Open-hearth charges a few years ago included half pig iron and half scrap, compared to present day charges of 40 per cent pig iron and 60 per cent scrap, according to a steelmaker.

Following the remarks of Mr. Schwartz, the open-hearth committee by a unanimous vote authorized the appointment of a committee to study in conjunction with the Institute of Scrap Iron and Steel the relative value of various grades of scrap in relation to pig iron, as well as a study of the relative prices of the cheaper grades of scrap, in accordance with their yield.

Constituents Show Increase

Analytical determination of the residual metals in open-hearth steel made at the Battelle Memorial institute, Columbus, O., and presented at the open-hearth meeting, was based on a period from February, 1932, to January, 1933. The average of all plants, by tonnage capacity, discloses an increase over the previous period for all constituents except manganese. The average, by plants, shows an increase for chromium and nickel, a decrease for manganese and copper, with tin remaining constant.

The average, by tonnage capacity, of the ten plants which have cooperated in all six periods shows an increase over the previous periods in all constituents, including manganese, copper, nickel, chromium, and tin. In the same ten plants the average, by plants, increased for chromium and nickel, decreased for manganese and copper, and remained constant for tin.

Comments on the manufacture of steel by the use of coke established the fact that the greatest difficulty is with the sulphur content. At one open-hearth shop pitch coke is used in the charge which contains scrap but no pig iron. The sulphur content in the pitch runs about 0.35 per cent. Burned lime is employed. Steel made by the use of pitch coke rolls and tests well, according to this open-hearth superintendent.

Another operator using burned lime and coke in open-hearth charges mentioned that the biggest difficulty in making steel, using coke in the charge, is with the alloys and sulphur.

In discussing the insulation of furnaces, roofs and checker chambers, one operator cited a furnace with the roof insulated. About 300 heats have been tapped out of the furnace. The roof is built with a 5-inch insulation. At the end of 121 heats the furnace was taken off on account of business conditions and since has operated intermittently. The furnace has been running on a shorter flame and a better balanced draft which ranges from 0.06 to 0.09-inch water pressure in the hearth.

Another operator discussing furnace roofs, alluded to a furnace in his plant which is built with 2 inches of insulation. His practice is to reuse this insulating material three or four times. His records show a saving in fuel amounting to 600,000 B.t.u. per ton of steel tapped.

Inclusions in steel, according to C. H. Sims, American Steel Foundries, may be divided in two classes, namely, natural and accidental inclusions. He mentioned that a relationship exists between types of inclusions and certain physical properties, principally the ductility. Variations in the ductility, Mr. Sims pointed out, is dependent on the formation of inclusions and not on the quantity of the inclusions. He showed that the size of inclusions increases as the size of the casting increases.

The degree of segregation, surface condition and internal structure of rimming steel are affected in open-hearth furnace and pouring practice, according to a report on the "Production of Quality Rimming Heats." Generally, it has been found that clean scrap charges give the best quality steels and that limestone gives better results than burnt lime in the charge. Steel from burnt lime heats, according to the report, appears to be more subject to laminations. In practice, it has been found that the most satisfactory rimming action is obtained when the iron oxide content of the slag is between 17 and 21 per cent. This range is maintained in 0.07 to 0.10 per cent carbon heats by holding the lime-silica ratio of the slag between 3 and 3.3 per cent. In order to keep within this range the lime charge requirement is 9.5 per cent.

Temperature Is Equalized

After the heat is worked down to the carbon content desired, the report continues, the practice is to add spiegel to the bath and tap the heat about 30 minutes after this addition. The purpose of the spiegel is to equalize the temperature of the bath and flux out some of the impurities. Ferromanganese is added in the ladle to meet the specification desired. Stick aluminum is added to the ladle, the amount depending on the percentage of iron oxide in the slag test taken before the spiegel addition. It has been found, the report continues, that this aluminum addition helps to compensate for variations in the iron oxide content of the slag, and with the addition of some aluminum to the molds, helps control the rimming action.

The action desired in the molds is to have the level of the steel drop slightly, say up to 1 inch after topping off and before starting to rim. This, the report concludes, is found to result in the most satisfactory ingot structure for deep drawing sheet steel.

An expression of the various independent open-hearth superintendents attending the Friday morning session disclosed no change in the number of hours and days per week of present-day open-hearth furnace schedules. A poll of the open-hearth group shows that practically all independent plants are operating 8 hours per day and six days per week and that no action yet has been taken in connection with the four-day 8-hour schedule.

Describes New Steel

Stabilized deep drawing steel, recently developed by the American Rolling Mill Co., Middletown, O., was described by Dr. Anson H. Hayes, director of research laboratories of the company. The new material in the dead soft condition will stretcher strain the same as ordinary mild steel, but this is prevented by small amounts of temper cold rolling and does not recur even after aging as long as a year at room temperature or 14 days at 212 degrees Fahr.

Moreover, Dr. Hayes states, the amounts of cold rolling employed for tempering the sheets does not impair the ductility. Actual experience in fabricating 80,000 sheets of this material in to automobile bodies confirms the suitability of this new grade of steel for deep drawing requirements.

Clinkered dolomite for use in open-hearth practice has gained in favor, especially during the last three or four years. This gain in favor, according to a report dealing with the "Evaluation of Dolomite," is due to research work based on the surface conditions as well as to the development of clinkered dolomite to better meet these surface conditions. This is accomplished by reducing the flux content of the refractory, by promoting rapid coalescence of the refractory and by preventing disintegration of the clinker by dusting.

Flux contents of clinkered dolomites, the report states, have been reduced by stages over the past 15 years until now, the well-prepared

(*Please turn to Page* 31)

A. S. T. M. Reports on Fatigue Testing and Corrosion

THREE important phases of the work of the American Society for Testing Materials reached a high point of attainment at the thirty-sixth annual meeting held in Chicago, June 26-30. The committees through which the society accomplishes so much in the scientific phases of testing were in session constantly from the opening day until late in the afternoon of the last day of the session. More than 125 committee and subcommittee meetings were held, attended by representatives of producers, consumers and the public, by which arrangement the society maintains the balance in the standards which it provides.

From a foundry standpoint, the high point of the meeting was the symposium on cast iron prepared jointly under the auspices of the A. S. T. M. and the American Foundrymen's association. This symposium, reported in July 3 issue of STEEL, represented presentation to the engineering world of many new and valuable metals all grouped under the general heading of cast iron.

A third and important contribution to the meeting was the Edgar Marburg lecture by Dr. Herbert J. Gough, directing head of the National Physical laboratory, Teddington, England. This lecture, "Crystalline Structure in Relation to Failure of Metals Especially by Fatigue," drew an attendance of over 300 members of the society and of the American Association for the Advancement of Science.

While the registration was below that of previous years, practically every line of endeavor of the society was represented and interest and activity was high. The 1934 annual meeting will be held at Atlantic City.

Compression Testing Proposed

In a session devoted to fatigue of metals, testing and metallography, the report of the committee E-1 on methods of testing was presented by W. N. Fulweiler, chairman, and various subcommittees reported individually. A new proposed method of compression testing of metallic materials was adopted as tentative, while a new tentative method of verification of testing machines and for analysis for size distribution of sub-sieve size particulate substances also were accepted.

C. H. Davis, assistant metallurgist, American Brass Co., Waterbury, Conn., chairman of the committee on metallography, presented tentative recommended practices for the thermal-analysis of steel and also a new grain size chart on classification of steel.

A new "over-night" test for development of endurance limit under fatigue testing was presented by H. B. Wishart, graduate student, University of Illinois, Urbana, Ill., whose work had been carried on under Dr. H. F. Moore, research professor. Briefly the new test requires five or six fatigue specimens upon which Rockwell hardness is determined. The specimens then are placed in rotating beam machines and subjected to approximately 1,400,000 cycles of stress. The specimens are removed and pulled as tension specimens, noting the tensile strength. Making corrections proportional to the Rockwell hardness, the test data are plotted with the number of cycles as ordinates and tensile strength as abscissas.

Checked Against Other Tests

The endurance limit is taken as the ordinate corresponding to the maximum abscissa of this curve. The method has been checked against long-run fatigue tests on structural steel, cold-rolled steel, brass, monel metal, nickel-steel, chromium-nickel steel, duralumin and notched cold-rolled steel. The results obtained show a close approximation in the case of materials other than soft white metals.

R. L. Templin, chief engineer of tests, Aluminum Co. of America, New Kensington, Pa., observed that the over-night test is not suitable for light metals inasmuch as metallographic if not actual chemical changes take place which impair short-time tests. Dr. Gough observed that hardening proceeds through the fatigue limit and that the latter is a variable.

W. H. Swanger and S. M. Shelton, bureau of standards, Washington, presented a paper which outlined fatigue tests of galvanized wire under pulsating tensile strength. Results are obtained which tend to show that this method of pulsating tensile testing is preferable to the rotating beam method for all forms of steel wire.

A paper on the fatigue properties of light metals and alloys by Mr. Templin supported the opinion that short-time tests are not applicable to the white metals. A joint paper by Dr. Ancel St. John and H. R. Isenburger, St John X-Ray Service Corp., New York, presented the conclusion that paper is preferable to film for industrial X-ray work.

At a session on corrosion resistance of metals, the committee on corrosion of iron and steel proposed new methods of determining the weight of coating on zinc-coated articles and recommended the advancement to standard of specifications for iron or steel telephone or telegraph wire, tie wire, wire cable strand and chain link for fence fabric. Comments on the quality of present grades of farm fence and barbed wire led to the suggestion that these specifications be studied during the coming year. R. F. Passano, American Rolling Mill Co., Middletown, O., reported for the subcommittee on field tests of metallic coatings. The general observation was made that the weight of coating is more important than the process of application.

Influence of water velocity and time on the corrosion of iron was reported by Mr. Passano in a joint report prepared with F. R. Nagley of the American Rolling Mill Co. Completely immersed specimens were used, observed and cleaned at varying intervals. Initially, iron loses weight in proportion to time. The duration of the initial period decreases as the velocity of flow of the water is raised. Iron exposed to water at high velocity loses more weight for a constant time than that in low velocity flow. Hugh R. Evans, Cambridge university, England, in a written discussion commented that over-all corrosion is less dangerous than localized corroding spots.

25,000 Specimens Exposed

In presenting the reports of the committee on the corrosion of nonferrous metals, T. S. Fuller, metallurgist, research laboratory, General Electric Co., Schenectady, N. Y., chairman, told of tests on 25,000 specimens of various nonferrous metals exposed at widely separated points throughout the country to the action of the atmosphere. The specimens are in portable tests racks and are returned to a central laboratory for observation. No cleaning is attempted on this long-time test, but observations as to the changes in weight, physical properties and color are noted.

Change in color was mentioned in discussion with a word of caution to architects. The growth of application of nonferrous metals to building purposes, combinations of aluminum, brass, bronze and stainless steel, should induce study of the color resulting after a time due to corrosion effects.

E. H. Dix Jr., Aluminum Co. of America, New Kensington, Pa. presented a paper on the growth of application of aluminum structural shapes and recounted rapid and long time corrosion tests being made, particularly on the duralumin series of alloys commonly adopted for structural service.

Jerome Strauss, chief research engineer, Vanadium Corp. of America, Bridgeville, Pa., chairman of the committee on iron-chromium and related

alloys, reported on tests being conducted on corrosion properties. A recommended practice on welding examinations is being prepared.

The report of the sectional committee on zinc coating of iron and steel, of which J. H. Capp, engineer, testing laboratory, General Electric Co., Schenectady N. Y., is chairman, presented proposed tentative specifications for hot-dip hardware and fastenings.

Nonferrous Session Considers Tin Base Alloys and Bearing Metals

MANY important developments in nonferrous metals were presented for consideration at one of the concluding sessions of the American Society for Testing Materials. E. E. Thum, editor, *Metal Progress*, Cleveland, presented the report on nonferrous metals and alloys. Requirements for special high-grade zinc specifying that it shall not contain more than 0.010 per cent lead, 0.005 per cent iron and 0.005 per cent cadmium, and shall be free from aluminum were proposed. A new tentative method of chemical analysis for aluminum and light aluminum alloys was offered.

J. N. Kenyon, civil engineering testing laboratories, Columbia university, New York, offered a paper showing the effect of the addition of lead on hardness of tin base bearing alloys. Lead in the amount of 3 to 4 per cent added to three tin base alloys increased the hardness of the material for temperatures up to 100 degrees Cent.

Compare White Metal Alloys

C. E. Swartz and A. J. Phillips, American Smelting & Refining Co,, Maurer, N. J., presented a comparison of white metal bearing alloys containing tin with those containing cadmium at temperatures up to 300 degrees Cent., and interest in the latter series of alloys is increased due to the fact that cadmium is found in the United States, while tin alloy is produced abroad. The compressive strength of cadmium nickel-bearing alloys is greater at all temperatures, while the softening point is higher than is the case for tin-base babbitts.

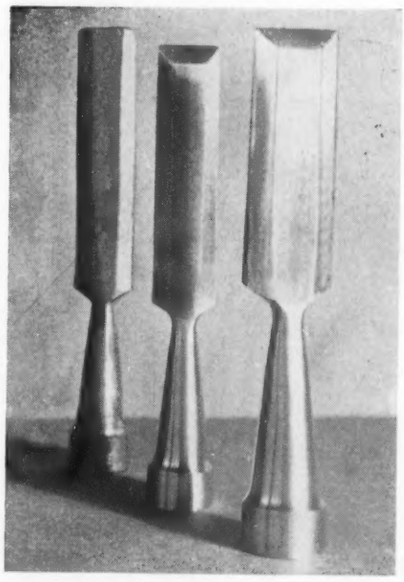
The cadmium-nickel alloy, unlike other cadmium alloys, readily is bonded with steel as well as brass. A test run was made with a six-cylinder automobile, three connecting rod bearings using cadmium bearings without backing and the other three using tin base babbitt, bronze backed. At the end of 62,500 miles the tin base bearings had melted while the cadmium bearings were in suitable condition to be replaced for additional service. Intense study is being devoted to the subject of bearing metals due to the fact that modern automobiles of the high compression type develop stresses up to 20,000 pounds per square inch and operate at temperatures up to 200 degrees.

Changes were proposed in the standard specifications for composition brass or ounce metal for sand casting. These increased the maximum copper content to 86 per cent and reduced tin, lead and zinc to 5.5 per cent in each instace, while the permissible maximum of phosphorus and nickel was lowered.

The standard specifications for yellow brass sand castings are recommended for revision with maximums as follows: Copper 67.0; tin 1.5; lead 4.0 per cent; and with phosphorus, zinc and antimony lowered. The permissible content of nickel is increased to 0.5 maximum.

H. B. Gardner, and C. M Saeger Jr, bureau of standards, Washington, presented a paper on the effect of sulphur and iron on the properties of red cast brass.

Proposed revised tentative specifications for zinc base alloy die castings were offered of the following composition; Copper, aluminum, magnesium, iron, lead, cadmium, tin and zinc.



CHISELS OF CAST ALLOY: Woodworking chisels cast of alloy iron Z-Metal have been developed by Gunite Foundries Corp., Rockford, Ill. These chisels are cast to shape, hardened, tempered and polished to the form suitable for service. While Rockwell hardness is somewhat lower than that of forged steel, the cutting edge has been found to be durable and effective. The chisel, as cast, is shown at the left of the group

Open-Hearth Operators Start Shop Rehabilitation

(*Concluded from Page* 29)

clinkered dolomites containing over 1 per cent silica, about 5 per cent iron oxide and less than 1 per cent alumina.

W. C. Buell Jr., engineer and author of a series of articles now being presented in STEEL entitled "Improving Open-Hearth Furnace Design," discussed the principles to be followed in the construction of a 150-ton open-hearth furnace. Deep brick, he stated, give better service than shallow brick. Not only the roof of open-hearth furnaces should be insulated, but the furnace above and below the charging floor should be so treated, if best operating results are to be obtained.

The speaker mentioned that savings of $6800 annually may be effected by insulating units above floor level. He threw out a word of warning, however, to the effect that commercial insulating materials vary through wide limits, and that no single insulation will satisfy all furnace requirements. He emphasized that the right insulating material should be used for the right purpose in the furnace.

In discussing the type of buckstays, Mr. Buell pointed out that it is better to have the buckstays deeper and narrower than to have them shorter and thicker.

Three-pass regenerators including an idle pass will improve operating conditions materially. In discussing draft control, Mr. Buell mentioned that 80 per cent of any good to an open-hearth furnace will be found in draft control provided the furnace is in proper condition.

The speaker was of the opinion that insulating materials should be divided into five classes and should be used accordingly. Such a division, he contended, should include hard brick which will withstand high temperatures and crushing strengths. Soft brick, the second classification, have high thermal qualities and are used where there is no superimposed load. A third classification should include loose materials in powdered, granular and wool form and should exert a high thermal effect. A fourth classification includes plasters which are used for coating the side walls. The final classification includes concretes which are not so good from the standpoint of thermal properties but have good mechanical strength.

IMPROVING OPEN-HEARTH FURNACE DESIGN

BY WILLIAM C. BUELL JR.

Part VI—Open-Hearth Furnace Ends

(Fortieth Article of Series)

PRIOR chapters have analyzed four of the principal elements of the furnace structure, namely, the bottom, back and front walls and the roof. These engird the furnace chamber and collectively constitute the transverse closure. The fifth and final principal elements required for the complete closure of the furnace chamber are the furnace ends or throats. Obviously, there are two of these, and, while both ends are of the same design each is reversed as to position.

The end of a furnace is defined as all of that part of the furnace structure from and including the end bank of the hearth, to, and including, the uptakes (or downtakes), to an intermediate point between the slag pockets and the furnace ports.

This chapter treats of the design of the ends from the standpoints of the thermal conditions and refractory requirements and usage; combustion conditions and constructions to produce appropriate effects; and the design of the containing and supporting structure.

Each of these three components of the ends are treated separately, but before proceeding with the discussion of refractories it will be well to examine end designs for the purpose of establishing a nomenclature that will be descriptive and easily understood.

Shop Parlance Varies

Uniformity in open-hearth nomenclature is lacking from plant to plant and terms often are applied that are at great variance with the ordinary English definition of the word. These misnomers in many cases have become rooted so deeply and understood so well in the practice that a perpetuation of the misnomer probably is inevitable. This condition is not unique in the open hearth, being parallel in the majority of the basic industries.

For the purpose of clarity of definition, two "inner" and "outer" are frequently compounded with certain of the end elements to designate location with reference to the transverse center line of the furnace. As a qualifying term, "inner" when compounded with an elemental term, refers to the face of such an element as may be towards the transverse center line of the furnace and away from the furnace end walls, while "outer" included in a compound term refers to the face of an element that is away from the transverse center line and towards the furnace end walls.

Two general types of furnace ends discussed are shown in Figs. 57, 58, 59 and 60*.

In these illustrations the encircled letters designate various components in accordance with the following description. From its maximum height over the bath the roof may descend through the inner roof slope, *A*, to its minimum height at the knuckle, *B*, and then ascend again through the outer roof slope, *C*, to the maximum end roof height.

If the gas fuel is regenerated it flows by the gas uptake, *D*, and into the furnace throat through the gas port, *E*, or *E* may indicate the point of entry for the nose of the oil, tar or other fixed and cold fuel burner.

Air from the regenerators passes through the air uptakes, *H*, to the furnace end and flows over the bridgewalls which may consist of three elements: the risers, *I*, the crests, *J*, and the scarps, *K*. The fuel and air pass

*Figs. 59 and 60 will be presented in next week's issue.

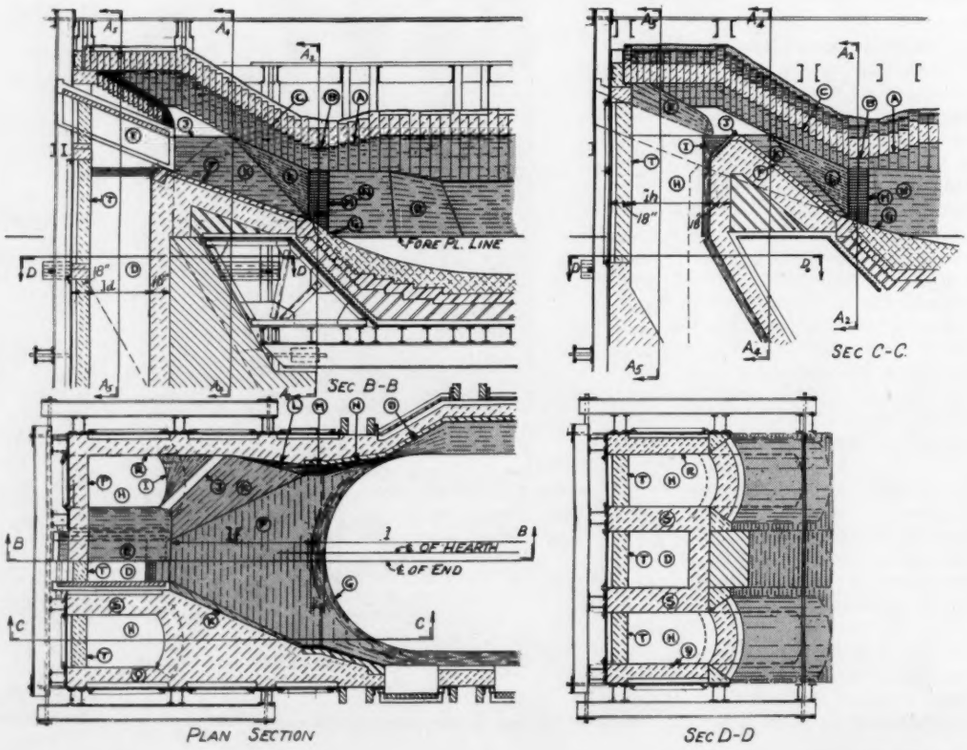


Fig. 57—Basic design of open-hearth furnace end for producer gas firing

furnaceward over the apron, *F*, and the end bank, *G*, to the bath, and the lateral development of the flame is controlled by the monkey walls which may consist of three elements, the outer wing wall, *L*, the cheek, *M*, and the inner wing wall, *N*. Wall continuity between *N* and the sloping back wall is through the back wall wing, *O*.

Development Has Lagged

Roof knuckles, monkey walls and bridge walls will be found of elementary development or almost totally absent in various furnaces. The front wall, *Q*, and the back wall, *R*, of the ends are identified easily being the closures at the front and back. The end wall consists of a series of panels, usually misnamed the bulkheads, *T*, supported in a bearing wall, *P*. The division walls between the uptakes, which might be correctly called the bulkheads, are designated as *S*.

The principal refractory used in the furnace ends is silica brick. Such surface areas as are subject to the effects of metallurgical reactions or severe mechanical abuse usually are veneered by a thin layer of magnesite and / or chrome brick, and the same materials generally are used in the bulkheads. Fire or common brick frequently are employed under the apron and in the uptake system where structural design requires the incorporation of mass brickwork. A large number of the ends of furnaces now installed are being insulated and it is probable that any new construction will include the complete insulation of furnace ends.

Refractories in Roofs of Ends

Although the average temperature of the silica brick roofs of furnace ends is lower than in the roof over the laboratory, perhaps, by as much as 500 degrees Fahr. usage apparently has decreed that a similar thickness of roof brick be used throughout the roof length although customarily no rib brick are employed at the ends, nor should they be.

The roof brick over the furnace laboratory, in the inner slope, if present, and at the knuckles, which should have about an 18-inch face, should be of the same width, preferably 9 inches. But on account of the much steeper angle of the outer roof slope and the lower unit cost of narrower brick, it is advisable to start from the knuckles and continue the roof to the furnace end walls with brick, say of 6-inch width. The narrower brick develops lesser exposed corner facets on the inner brick surface which tends to reduce spalling.

Skews at Same Elevation

From the knuckle outward, roofs will be symmetrical about the center line and have both skews at similar elevation. Preferably they should be designed for the simple 60-degree included angle and the unit end reactions will be but about two-thirds of those of the main roof where the sloping back wall is used.

The roofs should be insulated. To what degree insulation should be used will depend primarily on the thickness of the silica roof brick. Insulating material, which ordinarily will be loose material, should be applied in such thickness until the temperature of the cooler side of the silica brick nears 1800 degrees Fahr. The thermal resistance, *r*, of the silica brick at furnace end temperatures will vary directly from about 0.96 for 13½-inch roof brick to 1.28 for 18-inch roof brick. A temperature of 1600 degrees Fahr. at the junction of the silica brick and the insulation will be approached if insulation is added in sufficient thickness to make the combined resistance, *R*, from about 2.25 for the 13½-inch, to 3.0 for the 18-inch roof brick.

(To be Continued)

Bonded-Metal for Resin Laminating

RECENT studies at Mellon Institute of Industrial Research, Pittsburgh, have resulted in the adaptation of Robertson bonded-metal (see STEEL, March 21, 1932, p. 35) to meet the needs of the resin-laminating industry. The new material evolved by this developmental work facilitates the manufacture of decorative resin finishes.

The fiber coated bonded metal, a steel sheet with an applied surface adapted to provide anchorage for an adhesive, fits into the general practice employed in preparing resin-veneered sections. The fabric surface offers anchorage for resin adhesives and, when penetrated by the resin, gives a fiber-reinforced glue line with both fibers and adhesive attached to the metal, resulting in a bond considerably stronger than is possible by present methods of attachment to etched steel.

Heat and Pressure Used

Laminated resin is made by superimposing layers of resin-impregnated fabric or paper and combining them, under the simultaneous application of heat and pressure, into a dense, solid, homogeneous sheet. It has been found to be feasible to substitute a sheet of bonded-metal, with the fibrous surface layer, or layers, impregnated with resin for all or part of these fabric or paper layers to get a strong laminated sheet of similar appearance but having a steel core or backing.

Copies of research reports relating to the bonded-metal and also to its use in resin laminating will be sent to architects and engineers upon request to the Mellon institute.

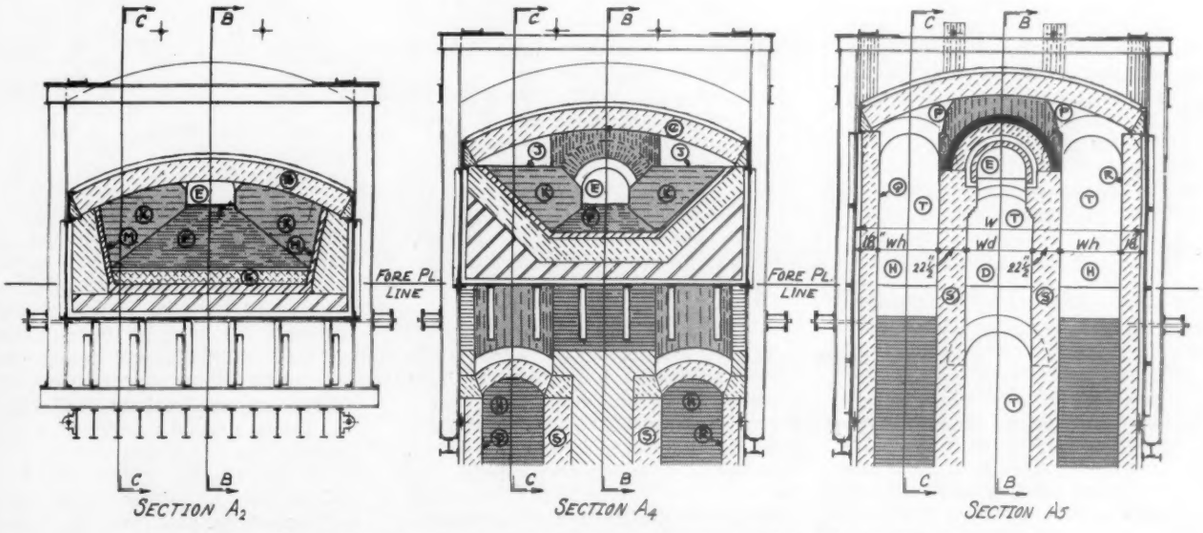


Fig. 58—Critical sections of open-hearth furnace end shown in Fig. 57

Making the Most of

METHODS AND MATERIALS

CONFRONTED with the necessity of completing a road building project before the ground froze too deeply for work, a contractor was working his crew day and night. Due to the severe digging and rough going, the steam shovel bucket fractured next to a riveted seam. Several unsuccessful attempts at repair were made, therefore, a new bucket was ordered but it was found delivery could not be made in time to save the contract. Thereupon, an oxyacetylene welder was consulted and it was decided to undertake repair by welding. The bucket had worn thin in spots which weakened it and caused the fracture about 18 inches long. The fracture was repaired first, then the worn spots were built up with high test steel welding rod. One set of shovel teeth also was built up with hard surfacing material. This work took but a day or two, putting the shovel back into operation and enabling the contractor to complete his work in time.

$ $ $

Belgian automotive manufacturers are showing their interest in cylinder sleeves of unusually high hardness. One maker is testing a cast iron containing 2.50 nickel and 0.80 per cent chromium, quenched and drawn to 400 brinell hardness, while a second raises the hardness specification to 450-500 brinell for this same material.

$ $ $

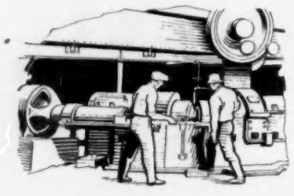
THE first mechanically-controlled cylindrical grinder for shop purposes was built for finishing calendar rolls for paper machines. These rolls were cast of chilled iron and could not be machined in the usual manner—they were trued up by driving a wide-faced lathe tool into the skin of the roll by means of a hammer. After this operation the roll grinder was employed to finish the surface accurately and at the same time to give the roll a slight crown at the middle of its length. The rolls were mounted on their own journals, 8 or 10 inches in diameter, in pillow blocks and driven by a floating coupling from the head spindle.

$ $ $

Surfaces of zinc die castings may be prepared for finishes with hydrochloric, phosphoric or hydrofluoric acid. When an acid etch is used on an alloy containing copper, however, care must be exercised, since it may leave a layer of undissolved copper on the surface. If it does, a vigorous brushing or scrubbing will remove it.

$ $ $

In spinning chrome-nickel stainless steels, the speed should be cut down to one-half to one-fourth that used for spinning copper. The lubricant used has a decided bearing on successful spinning. White lead and linseed oil mixed to a consistency of a medium bodied paste gives the best results. To prevent tearing of the metal, it is necessary to have



a lubricant heavy enough in body to withstand the high temperature encountered. The best type of spinning tool is hardened steel of about the same design as is used in the spinning of copper, except that it is desirable wherever possible to have the tool slightly flatter so as to present a greater bearing surface. This applies when either the spinning bar or roll is used.

$ $ $

While high-strength alloy cast-iron crankshafts have not yet been adopted in production, there are a great number of cars and engines containing these shafts in operation. Use of cast iron has pointed the way to an easy method for checking crankshaft design for experimental engines before expensive forging dies are made. A main objection to the use of this material was that it would not have a sufficient resistance to fatigue failure. This resulted in a number of preliminary tests in which the center bearing of a crankshaft was definitely off-set 1/32 to 1/16 inch and the shaft operated to failure under these conditions. To much surprise, the cast iron shaft operated several times longer than a steel shaft under like conditions.

$ $ $

A midwestern manufacturer of porcelain enamel metal ware uses photoelectric cells to count the pieces of ware as it enters the automatic enameling ovens.

$ $ $

TO PROTECT windmill parts more efficiently against rust, one manufacturer has replaced zinc galvanizing with cadmium plating. The complete tower, wheel frame and sail arms now are being plated. This manufacturer states it has found the use of cadmium plated bolts greatly increases the ease of erection. These bolts do not become rust-locked and whenever a general tightening up of the structure is needed, only a minimum of time and effort is required. Every part is smooth and evenly coated which assures a perfect fit.

$ $ $

In making high-chromium steel castings containing up to 25 per cent chromium, it has been found that the addition of nitrogen toughens the castings and provides a fine-grained casting without affecting the machinability. The nitrogen is introduced through the use of a special grade of ferrochrome.

$ $ $

The nonwetting characteristics of tantalum carbide are said to offer unusual advantages when the material is used for tipping tube drawing mandrels. Because of its high structural strength, it will resist shock and rough usage successfully. Other interesting applications of the material include highly polished and extremely hard friction disks, needle valves, scribers, knife edges for scales, gages, micrometers, spring coiling arbors, and forming tools for various purposes.

Designing a New Product?

WIRE may be its principal raw material or just an incidental part . . . but the fact remains that the wire used will have a definite function and must possess definite characteristics, based upon manufacturing requirements or product use. There is a WISSCO WIRE that exactly fits your requirements. Our service department will gladly cooperate with you to find the best wire for the job. And you may rest assured that later shipments will possess the same characteristics. WISSCO WIRE is *uniform*. Wickwire Spencer is a dependable source of supply.

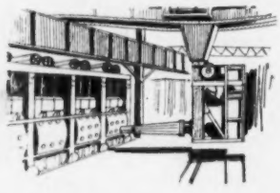
WICKWIRE SPENCER STEEL COMPANY
41 East 42nd Street, New York City; Buffalo, Chicago, Detroit, Philadelphia, Tulsa, Worcester; Pacific Coast Headquarters: San Francisco; Warehouses: Los Angeles, Seattle, Portland. Export Sales Department: New York City.

WISSCO WIRE
by Wickwire Spencer

Wickwire Spencer manufactures High and Low Carbon Wires—in various tempers, grades and finishes—for your specific purpose. Hard-Drawn, soft or annealed Basic or Bessemer Wires—Hard-Drawn annealed, or oil-tempered Spring Wire, Chrome Vanadium Spring Wires—Valve Spring—Music—Clip—Pin—Hairpin—Hook and Eye—Broom—Stapling—Bookbinding—Machinery Spring Wire—Reed Wire—Clock—Pinion—Needle-Bar—Screw Stock—Armature Binding—Brush—Card—Florist—Mattress—Shaped—Rope—Welding. Flat Wire and Strip Steel, High or Low Carbon—Hard, annealed or tempered—Clock Spring Steel—Corrosion and Heat Resisting Wires. Consult the Wissco technical man on your wire problems, however large or small.

PROGRESS IN STEELMAKING

AN AVERAGE of 110,000 tons of sheet bars per set of nonmetallic bearings has been rolled on an 18-inch Ohio mill on its first six sets of this type bearing. A production of 5000 tons on standard mill bearings never has been exceeded at this plant. The increase in bearing life, therefore, is over 2000 per cent.



LOW thermal conductivity combined with low heat-storage capacity are claimed for a recently marketed insulating material. The new refractory may be used at temperatures up to 2850 degrees Fahr. without shrinkage in linings of oil and gas-fired furnaces, resistant-type electric furnaces, coal-fired equipment and other units where mechanical abrasion and slag action are not encountered. The base of the brick is kaolin porosified to approximately 80 per cent.

♦ ♦ ♦

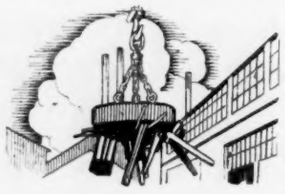
Rollers in the runout table serving an Ohio bar mill recently were built by welded construction at an estimated savings of 38 per cent. Each roller consists of a pipe, 6⅞-inch outside diameter and a hub which is held in position by four ⅞-inch diameter bars spaced and welded 90 degrees apart. The train of rollers of this type construction weighed 1225 pounds compared with 1928 pounds for those of the conventional type.

♦ ♦ ♦

Production of a new type of galvanized wire recently was inaugurated at an Eastern plant. The new product does not supplant hot dipped galvanized wire, but is made for special purposes where unusual bending and twisting is encountered and where high resistance to corrosion is a factor.

♦ ♦ ♦

Grain sizes of S.A.E. and allied structural steels now may be classified using a recently devised tentative standard chart. Eight sets of photomicrographs are included, each pair comprising hypoeutectoid and hypereutectoid zones of the steel case. Specimens were carburized at 1700 degrees Fahr. for 8 hours and cooled slowly to produce a pearlitic structure. The classification concerns only the size of the pearlitic grains and is independent of the condition of the excess carbide.



EXPLOSIVES are being used by European steelmakers for breaking iron and steel scrap to charging box size. Blasting is executed in armored pits about 25 feet long, 18 feet wide and 13 feet deep. The walls are lined with steel plates 12 inches thick. The pit is provided with a cover fabricated of three steel slabs 1 foot thick and weighing 83 tons, and equipped with valves through which the explosive gases are released. After holes are burned in the large blocks of scrap with an oxygen lance and the scrap is lowered into the pit by an electromagnet, dynamite is placed in the holes. Sand, clay, iron chips etc. are used as stemming. After the pit is covered, the charges are set off by an electric blasting machine. At one plant a 15-ton steel slab is broken with 13.3 pounds of dynamite in three holes and a 11-ton mill roll with 10 pounds. At another plant ingot mold bottoms weighing 8.7 tons are broken with 2½ pounds of explosive planted in 15 drilled holes. The process has been found more economical than skull cracking or gas cutting.

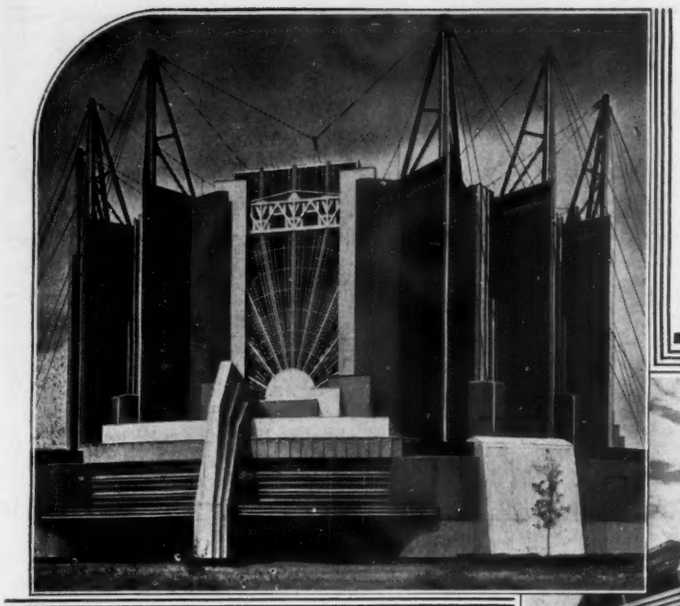
DISSIPATION of the heat from wire mill dies caused by increasing the drawing speeds or when hard wire is drawn has been made possible by the development of water-cooled casing which is cast integrally with the die and within close proximity to the nibs. Water-cooled dies permit faster drawing, afford longer die life and preserve the lubricant by reducing the heat that causes the charring.

♦ ♦ ♦

Maintenance costs of slitting machines at a plant of an Eastern producer of tin plate have been reduced by the installation of dust-tight starters.

♦ ♦ ♦

Mixing knives made of numerous types of irons and steels now are being tested for wear at a brick plant in Ohio. Based on a run of 2,000,000 brick, it is concluded that the wear resistance of steel and iron in this type service increases with their increase in brinell hardness value; that of the two types of wear-resisting tips employed, the harder tip is more resistant to wear than the one which was less hard but tougher; and, that ordinary cast iron and mild steel show about the same amount of wear.



American Steel & Wire Company Wire Rope supports the "Sky-Hung" Dome of the Travel & Transport Building.

American Quality Cold Rolled Strip Steel beautifies the exterior of the same structure.

In Service at a CENTURY OF PROGRESS.

DRAMATIC—presenting a remarkable new advance in structural development—is the "Sky-Hung" Dome, suspended by wire rope, over the Travel & Transport Building. From twelve towers of steel—American Steel & Wire Company Wire Rope sustains this great weight—allows the safe utilization of an unusually large floor area. On the same structure—a perfect application of American Steel & Wire Company Cold Rolled Strip Steel to architecture—may be seen in the steel panels which do so much to strengthen and beautify the exterior of the building.

Throughout the Exposition—additional American Steel & Wire Company products are playing an important part. These include—Wire Fabric Reinforcement, Wire Nails, Fiege Tiger-Claw Wire Rope Sockets, Premier Spring Wire, Zinc Insulated Fence, Steel Gates, Steel Posts and many others.

AMERICAN STEEL & WIRE COMPANY
WIRE AND WIRE PRODUCTS

1831 — MORE THAN 100 YEARS OF PROGRESS IN WIRE MAKING — 1933

AMERICAN STEEL & WIRE COMPANY

208 South La Salle Street, Chicago
94 Grove Street, Worcester

SUBSIDIARY OF UNITED STATES STEEL CORPORATION
AND ALL PRINCIPAL CITIES

Empire State Bldg., New York
First National Bank Bldg., Baltimore

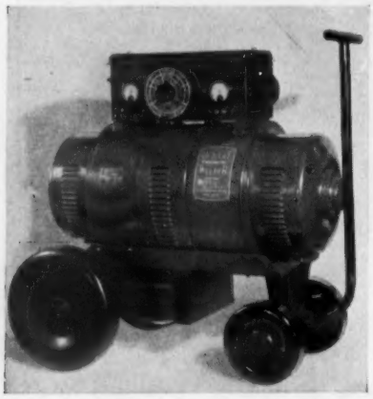
Pacific Coast Distributors: Columbia Steel Company, Russ Building, San Francisco
Export Distributors: United States Steel Products Company, New York.

NEW EQUIPMENT

PRODUCTION FABRICATION TREATMENT FINISHING

Line of Arc Welders Embody New Design Features

Hobart Bros. Co., Troy, O., has announced a new line of simplified arc welders. Features include "simplified" stabilization, polarity change, remote control, dual control, inbuilt exciter, etc. Selective reactance automatically cuts in or out to meet various welding requirements as the triple range lever is shifted.



Portable type electric motor driven Hobart arc welder

Welding polarity can be changed instantly to suit any type of electrode without disconnecting the welding cables. A heavy-duty, single unit shaft carries the motor, generator and exciter armatures and cooling fan.

The portable type of electric motor driven arc welder, shown herewith, is particularly adapted for plant maintenance, inside job shop work and other applications where it is not desirable or convenient to do all welding in the same location. Sturdy disk wheels with which it is equipped, are constructed of arc welded steel and are less likely to become entangled with objects on the floor.

◆

Markets Portable X-ray Units For Industrial Uses

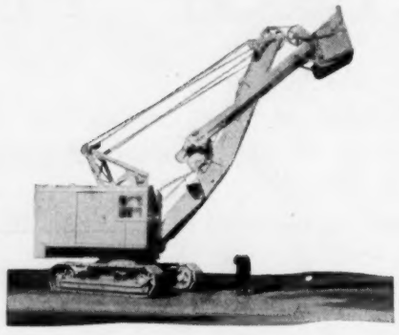
Industrial X-Ray Corp., Chamber of Commerce building, Los Angeles, is offering for the first time portable X-ray apparatus in various sizes. Adapted to all kinds of products including steel, wood, textiles, etc., the Philips Metalix portable X-ray equipment discloses incorrect practices, omissions, poor workmanship, internal results of changes in process of manufacture, what an internal strain looks like, what crystallization or heat treatment does to the product, etc.

◆

New Shovel Has Capacity Of 2 Cubic Yards

Northwest Engineering Co., 28 East Jackson boulevard, Chicago, recently announced a new 2-yard shovel, designated model 80. Both boom and dipper sticks on the unit, shown herewith, are of welded construction. The boom is cambered slightly to make possible maximum operating ranges. This new shovel is powered with a special four-cylinder engine, a heavy-duty power plant operating at slow speed. Low fuel consumption is claimed for this engine.

Design of the crawlers makes possible positive traction even while turning. According to the manufacturer, the cushion clutch on the hoist drum transmits the full engine power but reduces overload shocks 50 per cent. The feather touch control shifts the main clutches, making operation swift and easy. Operation of the clutch is in direct proportion to the pressure of the operator's hand on the lever.



Cambered boom is a feature of Northwest 2-yard shovel

◆

Designs Self-Opening Die Heads for Automatics

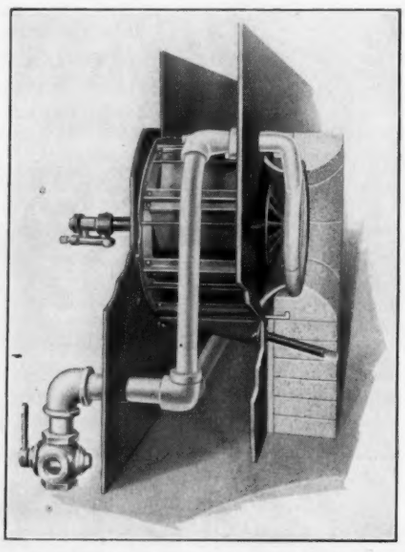
Eastern Machine Screw Corp., Truman and Barclay streets, New Haven, Conn., recently developed a self-opening die head for No. 2 Brown & Sharpe screw machines that will permit threading up to full 1-inch diameter in both coarse and fine pitches. This unit considerably increases the range of work that can be threaded with self-opening die heads on these machines. Design is such that it permits cutting a 1-inch diameter thread, 2 inches long on these automatics.

Since high-speed chasers are employed higher cutting speeds are possible. It is not necessary to reverse the spindle for backing off, thereby eliminating wear and tear on the machine from shock of reversal. The usual reverse may be used as a second forward speed.

◆

Unit Is Combination Oil And Gas Burner

Babcock & Wilcox Co., 85 Liberty street, New York, has announced a combination oil and gas burner, shown herewith, in which is combined the features of the B & W mechanical atomizing oil burner with an efficient method of burning gas. The gas is broken up into small streams and is discharged at right angles into a venturi throat through which the air for combustion passes, insuring complete mixing and rapid combustion. The burner is made in heat liberation capacities up to 70,000,000 British thermal units per hour per burner using natural gas.



New Babcock & Wilcox combination oil and gas burner

Heavy Specifications Still Lifting Steel Rate

Up 1 Point to 55 Per Cent—Moving Toward One-Price Basis on Heavy Finished Products—More Prices Advanced—Scrap Active, Stronger

SPECIFICATIONS against contracts entered prior to recent price advances and in anticipation of an Aug. 1 deadline on preferential prices for heavy finished products appear to insure a July output of steel at approximately the current rate, which was 55 per cent last week and will be at least 56 per cent this week.

Fresh ordering, however, shows a tendency to ease off, as the incentive to cover has been largely removed. Thus far the automotive and tin plate industries have borne the brunt of the rise. Tin plate promises to remain at its present peak well into the fall, but automotive specifications may taper this month in anticipation of a letdown in assemblies in August.

Thus, the issue of steel production in late July and August probably will rest with the railroads and the building industry. Present indications point to improvement in railroad orders, and structural tonnage will undoubtedly gain when the public works program gets under way and the threat of higher prices matures projects held in abeyance.

Rail releases on orders placed a year or two ago are supporting mill operations at Chicago; track accessory releases are fairly heavy, and car equipment work is more active. Brazil has placed 38,000 tons of rails and track fastenings with the United States Steel Corp.

Structural awards for the week increased to 25,406 tons, including 15,500 tons for a New York Central railroad viaduct in New York. The Pennsylvania railroad's plans for proceeding with its electrification program may release 30,000 tons of shapes. Within the week 3700 tons of plates were placed for oil tanks; inquiries came out at New York for 5500 tons of steel pipe.

Another surge of activity has developed in scrap, which usually is barometric, carrying prices up 50 cents to $1 a ton in most districts; the general average being the highest since April, 1931. Raw material requirements continue strong, with six more blast furnaces lighted in the first week of July, following the gain of 29 last month. Leading Lake Superior iron ore shippers now estimate 20,000,000 tons for this season, six times last season, with 116 vessels in commission this month, four times as many as last summer.

Steelworks operations gained in the majority of districts last week; up 25 points to 75 per cent at Birmingham; 4 points to 90 at Wheeling, W. Va.; 3 points to 63 at Youngstown, 3 to 56 at Chicago; 6 to 54 at Buffalo; 12 to 83 in New England; ½-point to 40 in eastern Pennsylvania. Cleveland remained at 82; Pittsburgh at 46, and Detroit at 38.

Daily average steel ingot production in June rose 34 per cent to 99,904 gross tons, largest since April, 1931. Calculated total output for the month was 2,597,517 tons, bringing production for the first half year to 8,989,192 tons, or 1,291,982 tons over the period last year.

Progress toward a single price basis, one of the objects of the steel industry, is indicated by a limitation to Aug. 1 on preferential prices to large buyers of plates, shapes and bars; and thereafter 1.60c, Pittsburgh, is expected to apply for the entire third quarter.

Price advances continue to spread, with wire products up $5 a ton, and increases in wire rods and manufacturers' wire expected shortly. Steel pipe has been increased $6 to $7 a ton. Relaying rails are up $2 to $3 a ton. Spiegeleisen has been advanced $3 a ton, following the rise of $10 to $14 a ton in ferronmanganese. Announcement of an advance in tin plate this month to apply through the second half is more definitely indicated at New York.

STEEL'S iron and steel composite this week is up 48 cents to $29.67; the finished steel composite has advanced $1.20 to $47.50; and the scrap composite is up 37 cents to $10.16.

Composite Market Averages

	July 8	July 1	One Month Ago June, 1933	Three Months Ago April, 1933	One Year Ago July, 1932	Ten Years Ago July, 1923
Iron and Steel Composite	$29.67	$28.19	$28.73	$28.16	$29.47	$45.39
Finished Steel Composite	47.50	46.30	45.30	44.94	47.71	68.33
Steelworks Scrap Composite	10.16	9.79	9.55	7.23	6.06	16.45

Iron and Steel Composite:—Pig iron, billets, slabs, sheet bars, wire rods, tin plate, nails, sheets, plates, shapes, bars, and black pipe. Finished Steel Composite:—Plates, shapes, bars, hot strip, nails, tin plate pipe. Steelworks Scrap Composite:—Melting steel, compressed sheets.

COMPARATIVE PRICES OF IRON, STEEL AND COKE

Representative Market Figures for Current Week, Last Month, Three Months and One Year Ago

	July 8, 1933	June 1933	April 1933	July 1932
Pig Iron				
Besemer, del. Pittsburgh	$17.26	17.26	16.26	15.76
Basic, valley	15.00	15.00	14.00	14.00
Basic, eastern, del. eastern Pa.	16.19	16.19	14.19	14.25
No. 2 foundry, del. Pittsburgh	16.76	16.70	15.76	15.76
No. 2 foundry, Chicago	16.00	16.00	15.50	15.50
*Southern No. 2, Birmingham	12.00	12.00	11.40	11.00
**No. 2X, Virginia furnace	17.75	17.75	17.75	18.00
**No. 2X, Eastern, del. Phila.	16.76	16.76	14.51	14.76
Malleable, valley	15.50	15.50	14.50	14.50
Malleable, Chicago	16.00	16.00	15.50	15.50
Lake Superior charcoal, del. Chi.	23.04	23.04	23.04	23.04
Gray forge, del. Pittsburgh	16.63	16.63	15.63	15.63
Ferromanganese, del. Pittsburgh	87.24	73.24	73.24	73.24
Coke				
Connellsville, furnace, ovens	2.00	1.80	1.75	2.00
Connellsville, foundry, ovens	2.75	2.40	2.25	3.00
Semifinished Material				
Sheet bars, open-hearth, Youngs.	26.00	26.00	26.00	26.00
Sheet bars, open-hearth, Pitts.	26.00	26.00	26.00	26.00
Billets, open-hearth, Pittsburgh	26.00	26.00	26.00	26.00
Wire rods, Pittsburgh	35.00	35.00	35.00	37.00

*1.75-2.25 silicon. **2.25-2.75 silicon.

Delivered pig iron prices subject to 10 per cent freight surcharge, maximum 13.44c per gross ton, beginning Jan. 4, 1932.

	July 8, 1933	June 1933	April 1933	July 1932
Finished Material				
Steel bars, Pittsburgh	1.60	1.60	1.60	1.60
Steel bars, Chicago	1.70	1.70	1.70	1.70
Steel bars, Philadelphia	1.91	1.91	1.91	1.91
Iron bars, Chicago	1.65	1.65	1.65	1.65
Shapes, Pittsburgh	1.60	1.60	1.60	1.60
Shapes, Philadelphia	1.65	1.65	1.65	1.75
Shapes, Chicago	1.70	1.70	1.70	1.70
Tank plates, Pittsburgh	1.60	1.55	1.55	1.60
Tank plates, Philadelphia	1.54½	1.49½	1.49½	1.79½
Tank plates, Chicago	1.70	1.70	1.70	1.70
Sheets, No. 10 blue anneal., Pitts.	1.80	1.65	1.55	1.70
Sheets, No. 24, hot ann., Pitts.	2.25	2.10	2.00	2.20
Sheets, No. 24, galvan., Pitts.	2.85	2.70	2.65	2.85
Sheets, No. 10 blue anneal., Chi.	1.95	1.80	1.70	1.85
Sheets, No. 24 hot ann., Chicago	2.40	2.25	2.15	2.35
Sheets, No. 24 galvan., Chicago	3.00	2.85	2.80	3.00
Plain wire, Pittsburgh	2.10	2.10	2.10	2.20
Wire nails, Pittsburgh	2.10	1.85	1.85	1.95
Tin plate, per base box, Pitts.	4.25	4.25	4.25	4.75
Scrap				
Heavy melting steel, Pitts.	$12.00	11.65	9.90	8.35
Heavy melting steel, eastern Pa.	10.00	9.50	6.90	6.25
Heavy melting steel, Chicago	9.75	8.80	6.55	4.50
No. 1 wrought, eastern Pa.	11.00	10.25	7.35	6.25
No. 1 wrought, Chicago	9.80	8.10	5.50	4.60
Rails for rolling, Chicago	10.75	10.25	8.50	6.60

Sheets

Shipments Continue Heavy, While Price Advances Receive Little Test on New Buying

SHEET PRICES, PAGE 41

Pittsburgh—Higher sheet prices now are in effect for July, but little test has been provided. Full-finished cold-rolled sheets are 2.15c, Pittsburgh, for No. 10 gage; and 2.60c for No. 20. The mill-run cold-rolled classification on these two gages has been dropped. Prices on mill-run cold-rolled were $4 a ton less than the above named basis. Among recent orders was one for 2000 tons of black sheets. Galvanized sheets are in good demand. Victor Brewing Co., Jeannette, Pa., has placed 2000 insulated steel barrels with Murray Mfg. Co., Detroit.

Cleveland—Consumers who could foresee their requirements closed before the recent price advances, and deliveries of their orders will extend into August. Others who came into the market last week paid the new prices, up $3 a ton. Sales were not as brisk as in the latter part of June, though shipments are continuing heavy. Moderate business is expected until a revival in buying for August and September.

Chicago—Sheet producers have fairly substantial backlogs as a result of heavy specifications placed prior to expiration of second quarter contracts. While a slight lull has developed so far this month in new business, operations and shipments continue active.

Philadelphia—Sheet specifications have dropped sharply. Meanwhile, the new prices are being generally quoted with the possibility that they may be extended for the entire quarter instead of for July only.

New York—Although some sheet mill representatives here have as yet received no definite word, the tendency appears to be for sellers to extend the new prices named last week on all tonnage that can be shipped by Sept. 30. A heavy movement continues against orders placed prior to July 1.

St. Louis—Producers and distributors of steel sheets report business is not showing the usual seasonal recession. Miscellaneous demands still predominate. Galvanized sheets are more active in the South.

Cincinnati—Sheet mills maintained production schedules during the past week to meet deliveries on specifications entered late in June. New business shows prices are firm.

Birmingham, Ala.—All sheet mills here are in operation. Specifications generally are for early delivery.

Sheet and Tin Plate Mill Wages Unchanged

Wage rates in sheet and tin plate mills having contracts with the Amalgamated Association of Iron, Steel and Tin Workers will be unchanged for July and August, the average sales price of Nos. 26, 27 and 28 gage black sheets holding at 2.30c per pound in May and June. Monthly comparisons follow:

Jan.-Feb.	2.30c	2.40c	2.60c
March-April	2.30c	2.30c	2.65c
May-June	2.30c	2.30c	2.50c
July-Aug.	.....	2.30c	2.40c
Sept.-Oct.	.....	2.30c	2.40c
Nov.-Dec.	.....	2.30c	2.40c
Yearly average	.....	2.31c	2.49c

Sullivan Machinery Co., Chicago, has combined its St. Louis district sales office, formerly at 2015 Railway Exchange and its warehouse, formerly at Mt. Vernon, Ill., to a new address at 2639-41 Locust avenue, St. Louis. D. M. Sutor is manager and a complete stock of parts for air compressors, highway drills, drill sharpeners, hoists, coal cutters, coal loaders, cutter bit sharpeners and diamond drills will be carried.

CURRENT FINISHED STEEL PRICES

Delivered prices subject to freight surcharge corrected to nearest ½c. Asterisk denotes price change this week

Sheet Steel

HOT ROLLED No. 10
(24 to 48 inches wide)

Pittsburgh, base	1.65c
Chi. dist. mills	1.75c
Chicago, del.	1.80c
New York, del.	2.00c
Birm., base	1.80c
Phila., del.	1.96c
St. Louis, del.	1.84c

HOT ROLLED ANN. No. 10

Pittsburgh, base	1.80c
Chi. dist. mills	1.90c
Chicago, del.	1.95c
Phila., del.	2.11c
New York, del.	2.15c
St. Louis, del.	1.99c
Birm., base	1.95c
*San Fran., c.i.f.	2.27½c

HOT ROLLED ANNEALED No. 24

Pittsburgh, base	2.25c
Chi., dist. mills	2.35c
Chicago, del.	2.40c
New York, del.	2.60c
Phila., del.	2.56c
Birm., base	2.40c
St. Louis, del.	2.59c
*San Fran., c.i.f.	2.90c

GALVANIZED No. 24

Pittsburgh, base	2.85c
Chi. dist. mills	2.95c
Chicago, del.	3.00c
Phila., del.	3.16c
New York, del.	3.20c
Birm., base	3.00c
St. Louis, del.	3.19c
*San Fran., c.i.f.	3.50c

TIN MILL BLACK No. 28

Pittsburgh, base	2.50c
Gary, base	2.60c
St. Louis, del.	2.84c

MILL RUN COLD-ROLLED No. 10

Pittsburgh, base	1.95c
Chicago, del.	2.10c
Philadelphia, del.	2.26c
New York, del.	2.30c

No. 20

Pittsburgh, base	2.40c
Chicago, del.	2.55c
Philadelphia, del.	2.71c
New York, del.	2.75c

AUTO. AND FURNITURE

Pittsburgh, No. 10	2.15c
Pittsburgh, No. 20	2.60c

ENAMELING SHEETS

Pitts., No. 10	2.40c
Pitts., No. 20	2.90c

Tin and Terne Plate

Per 100-lb. box, Pittsburgh

Tin plate, coke base, contract	$4.25
Do., stock	3.75
Long ternes, No. 24 unassorted	2.90c

Gary base, 10 cents higher.

Corrosion, Heat Resistant Alloys

Base, Pittsburgh

18% chrome, 8% nickel sheets, 35c; plates, 31c; bars, 28c.

	A	B	C	D
Bars	19c	20.5c	23c	28c
Plates	21c	22.5c	25c	30c
Sheets	26c	27.5c	30c	35c
Hot Strip	19c	20.5c	23c	28c
Cold Strip	25c	26.5c	29c	34c

Carbon 0.12 and under; no nickel. A has chrome 15% and under. B over 15/18% inc., C over 18/23% inc., D over 23/30%.

Steel Plates

Pittsburgh, base	1.60c
New York, del.	1.60c to 1.70c
Phila., del.	1.49½ to 1.59½
Boston, del.	1.72c to 1.82c
Buffalo, del.	1.85½c
Chicago, base	1.70c
Cleveland, del.	1.80½c
Birmingham, base	1.75c
Coatesville, base	1.40c to 1.50c
Pacific Coast, c.i.f.	1.75c
St. Louis, del.	1.94c

Structural Shapes

Pittsburgh, base	1.60c
Philadelphia, del.	1.65c to 1.75c
New York, del.	1.77c to 1.87c
Boston, del.	1.90½c to 2.00½c
Chicago, base	1.70c
Cleveland, del.	1.80½c
Lackawan., base	1.70c
Birmingham, base	1.75c
Pacific Coast, c.i.f.	2.10c
Do., wide flange	2.20c

Bars

SOFT STEEL

Pittsburgh, base	1.60c
Chicago, base	1.70c
Birmingham, base	1.75c
Lackawan., base	1.70c
Pacific Coast, c.i.f.	2.00c
Cleveland, base	1.65c
Philadelphia, del.	1.91c
New York, del.	1.95c
Boston, del.	2.02c
Pitts., cold finish	1.70c
Pitts., forg. qual.	1.75 and 1.85c
San Fran., c.i.f.	2.10c

RAIL STEEL

Pitts., Buff.	1.50c
Chicago, base	1.50c
Eastern mills	1.50c

IRON

Chicago, base	1.60c to 1.65c
New York, del.	1.85c to 1.90c
Philadelphia, del.	1.81c to 1.86c
Pitts., refined	2.70c to 4.20c

REINFORCING

New billet steel, Chi., Pitts., Buff., Cleve., Birm. (cut lengths)	1.75c
Chicago, rail steel	1.50c
Phila., cut lengths	1.86c

Wire Products

(Prices apply on carload lots. Mixed carloads 10 cents higher; joint carloads up 20 cents; less carloads up 30 cents. Nail extras subject to 10 per cent discount on straight or mixed carload shiped to single consignee.)

F.o.b. mills, 100 lb. keg

*Standard wire nails	2.10
*Cement coated nails	2.10
*Galvanized nails	3.60

(Per pound)

*Polished staples	2.80c
*Galvanized fence staples	3.05c
*Barbed wire, gal.	2.60c
Annealed fence wire	2.25c
Galvanized wire	2.60c
*Woven wire fencing (base column, c.l.)	$55.00

(To Manufacturing Trade)

Plain wire, 6-9 ga	2.10c
Spring wire	3.10c

Anderson, Ind., $1 over Pitts.-Cleve.; Chicago, Duluth and Worcester, $2 higher; Fairfield, Ala., $3 higher.

Cold-Finished Bars

Base Pitts., one size, shape, grade, shipment at one time to one destination

10,000 to 19,999 lbs.	1.70c
20,000 to 59,999 lbs.	1.65c
60,000 to 99,999	1.60c
100,000 lbs. and over	1.57½c

Chicago, Cleveland, Buffalo 5c higher; Detroit, 20c; eastern Michigan 25c.

Shafting

Cumberland, Md., base

1⅛-inch	3.00c
1⅜ to 1½-inch	2.50c
1⅝ to 1⅞-inch	2.20c
2⅛ to 6-inch	2.05c

Alloy Steel

Hot rolled, f.o.b. Pittsburgh, Buffalo, Chicago and Massollon, O. Base 2.45c to 2.65c. Differentials to various classes of consumers.

S.A.E.	Alloy Diff.	S.A.E.	Alloy Diff.
2000	0.25	3100	0.55
2100	0.55	3200	1.35
2300	1.50	3300	3.30
2500	2.25	3400	3.20

4100 .15 to .25 Mo.	0.50
4600 .20 to .30 Mo. 1.25-1.75 Ni.	1.05
5100 .80-1.10 Cr.	0.45
5100 Cr. spring	0.20
6100 bars	1.20
6100 spring	0.95
Cr., Ni., Van.	1.50
Carbon van.	0.95
9250 (flats)	0.25
9250 (rds., sq.)	0.50

Strip, Hoops, Bands

Hot-rolled strip up to 23 15/16-in. wide, Pitts.	1.65c
Do., Chicago	1.75c
Do., del. Phila.	2.06c
Do., del. N. Y.	2.10c
*Cooperage hoop, Pittsburgh	1.75c
Do., Chicago	1.75c
Cold-rolled strip Pitts,, Cleve.	2.25c
Worcester, 3 tons or over	2.45c

Rails, Track Material

Stand. rails, mill	$40.00
*Relaying rails, Pitts., 20-45 lbs.	$22.50 to 25.00
* 50 to 75	$19.00 to 21.00
* 80 to 100	$23.00 to 24.00
Light rails, 25-45, mills	$30.00
Light rails, Chi.	$32.00
Angle bars, mills	2.55c
Spikes, R. R. mills	2.40c
Spikes, boat, b'ge, Pitts.	2.65c
Track bolts, Chi.	3.50c
Do., stand. job.	73 off list
Tie plates, Pitts.	$35.00
Tie plates, Chi.	$35.00

Rivets, Wrought Washers

Struc. c.l., Pitts-Cleve.	2.50c
Struc., c.l., Chi.	2.60c
7/16-in. & smaller, Pitts., Chi., Cleve.	70, 10 and 5 off
Washers, c.l., Pitts. dist.	7.35 off
Do., Chi. dist.	7.25 to 7.00 off

Bolts and Nuts

Pittsburgh, Cleveland, Birmingham, Chi. Discounts to legitimate jobbing or large consuming trade for full-case lots, Dec. 1, 1932, lists.

CARRIAGE BOLTS

All sizes, cut thread	73 off
Rolled thread, ½ x 6 and smaller	73 off
Eagle list	73 off

MACHINE BOLTS

All sizes, cut thread, lag screws, plow bolts, Nos. 1-2-3-7 heads, tap bolts, blank bolts, stud bolts without nuts	73 off
Tire bolts	60 off
Stove bolts, 72½-25-10 off in pkgs.; 85 off in bulk, 5000 or more of a size.	
Rolled thread machine bolts, ½ x 6 and smaller, 73 off.	

NUTS

Semifinished	73 off

HEXAGON CAP SCREWS

Milled	85 off
Upset 1-in. diam., smaller	85-10 off

SQUARE HEAD SET SCREWS

Upset, 1-in., smaller	80 off
Upset, larger than 1-in.	80 off
Headless set screws	75-10 off

Cut Nails, Piling

Cut nails, Pitts.; (10% discount on size extras)	$2.65
Do., less carloads, 5 kegs or more; no discount on size extras	$2.90
Do., less than 5 kegs; no discount on size extras	$3.05
Steel piling, Pitts.	1.90c

Pipe and Tubing

Base $200 net ton, except on standard commercial seamless boiler tubes under 2 inches and cold drawn seamless tubing.

Welded Iron, Steel Pipe

Base discounts on steel pipe, Pittsburgh and Lorain, O., to consumers in carloads, Indiana Harbor, Ind., and Evanston, Ill., 2 points less. Chicago delivered, 2½ points less. Wrought pipe, Pittsburgh base.

All discounts are net.

BUTT WELD

Steel

In.	Blk.	Gal.
*¼ and ⅜	57	38½
*½	62	50½
*¾	65½	55½
*1—3	67½	58½

Iron

½	31½	15
¾	36½	20½
1—1¼	39½	25½
2	41½	26

LAP WELD

Steel

*2	63½	54½
*2½—3	66½	57½
*3½-6	68½	59½
*7 and 8	67½	57½
9 and 10	67	57
11 and 12	66	56

Iron

2	37	22½
2½—3½	38	25
4—8	40	28½
9—12	38	24½

(*Please turn to next page*)

RAW MATERIAL PRICES

Delivered pig iron prices subject to 10 per cent freight surcharge, maximum 13.44c gross ton, from Jan. 4, 1932, except Buffalo del. at Boston. Asterisk denotes price change.

LINE PIPE

Steel

*⅛-inch, butt weld	50½
*¼—⅜, butt weld	56
*½, butt weld	61
*¾, butt weld	64½
*1—3, butt weld	66½
*2-inch, lap weld	62½
*2½—3, lap weld	65½
*3½—6, lap weld	67½
*7—8, lap weld	66½
9—10, lap weld	66
11—12, lap weld	65

Iron

⅛—1½ inch, black and galv. take 4 pts. over; 2½—6 inch 2 pts. over discounts for same sizes, standard pipe list. 8—12 inch no extra. 2-inch line discount unchanged from list prior to April 15, 1933.

BOILER TUBES

C. L. Discounts, f.o.b., Pitts.

Lap Welded Steel		*Charcoal Iron*	
2—2¼	38	1¾	8
2½—2¾	46	2—2¼	13
3	52	2½—2¾	16
3¼—3¾	54	3	17
4	57	3¾—3½	18
4½—6	46	4	20
1½	1	4½	21

On lots of a carload or more, above base discounts subject to preferential of two 5 per cent discounts on steel and 10 per cent on charcoal iron.

Lap Welded Steel—Under 10,000 pounds, 6 points under base and one 5 per cent; on 10,000 pounds to carload, 4 points under base and two 5 per cents. Quantity discounts, same as for hot rolled below. Charcoal Iron—Under 10,000 pounds; 2 points under base; on 10,000 pounds to carload, base and one 5 per cent.

STANDARD COMMERCIAL SEAMLESS BOILER TUBES

Cold Drawn

1 inch	61	3	46
1¼—1½	53	3¼—3½	48
1¾	37	4	51
2—2¼	32	4½, 5, 6	40
2½—2¾	40		

Hot Rolled

2—2¼	38	3¼—3½	54
2½—2¾	46	4	57
3	52	4½, 5, 6	46

Quantity discounts are: Under 10,000 pounds, 10 points and 5 per cent; 10,000 to 24,999 pounds, 6 points and 5 per cent; 25,000 pounds to carload, 2 points and 5 and 5 per cent; carload and over, base discount and 5 and 5 per cent. No extra for lengths up to and including 24 feet. Sizes smaller than 1 inch and lighter than standard gage to be held at mechanical tubes list and discount.

Seamless Tubing

Cold drawn; f.o.b. mill disc.

100 ft. or 150 lbs. 40%
15,000 ft. or 22,500 lbs. 70%

Cast Iron Water Pipe

Class B Pipe—Per Net Ton

6-in. & over, Birm.	$35.00-36.00
4-in., Birm.	38.00-39.00
4-in. Chicago	46.40-47.40
6 to 24-in. Chicago	43.40-44.40
6-in. & over, N. Y.	32.00-34.50
4-in. New York	34.50-36.50

Class A pipe $3 over Class B. Stand. fitgs., Birm. base..$90.00

Six to 24-inch, fittings, base; over 24-inch plus $20; 4-inch, plus $10; 3-inch, plus $20; gas pipe fittings, $5 higher.

Pig Iron

Per Gross Ton

FOUNDRY NO. 2

Chicago, furnace	$16.00
Pitts., dist. fur.	16.00
Pittsburgh, del.	16.63-17.13
Valley furnace	15.50
Cleve. fur., loc. del.	15.50
Philadelphia, del.	16.26
Virginia furnace	17.25
Granite City, Ill.	16.00
St. Louis, del.	16.85
Buff., fur., local del.	16.00
Buff., all-rail, Bost.	19.05
Buff., del. Brook.	18.50-19.00
Buff., del. Newark.	17.00-17.50
Ala., Birmingham	12.00
Ala., del. Chicago	16.25-16.78
Ala., del. St. Louis	16.35
Ala., del. Cincinnati	16.51
Ala., Phila., dock del.	17.00-17.25
Ala., Balt., dock del.	17.00
Ala., N. Y. dock	17.50
Ala., Bost. dock del.	17.50-17.75
Tenn., Bir. base	13.00
Tenn., del. Cinci	16.51
Montreal, del	22.00
Eastern, del. Phila.	16.76

FOUNDRY NO. 2X

Buff., fur., local del.	16.50
Buff., del. Brook.	19.00-19.50
Do, Newark	17.50-18.00
Buff., all-rail, Bost.	19.55
Virginia furnace	17.75
Eastern, del. Phila.	16.76

FOUNDRY NO. 1X

Buff., fur., local del.	17.50
Eastern, del. Phila.	17.26
Buff., del. Brook.	19.50-20.00
Buff., del. Newark	18.00-18.50

MALLEABLE

Valley furnace	15.50
Cleve. fur., loc. del.	15.50
Pittsburgh dis. fur.	16.00
Pittsburgh, del.	16.63-17.13
Chicago, furnace	16.00
Buff., fur., loc. del.	16.50
Eastern Pa., del.	17.13-18.91
Granite City, fur.	16.50
Montreal del.	22.50
Toronto, delivered	21.00

BASIC

Pitts., dist. fur.	15.50
Pittsburgh, del.	16.13-16.62
Eastern Pa., del.	16.00-16.25
Buff., fur., loc. del.	15.50-16.00
Montreal, del.	22.00
Valley, furnace	15.00

BESSEMER

Valley furnace	16.00
Pittsburgh fur.	16.50
Pittsburgh, del.	17.13-17.63

LOW PHOS.

Valley fur. stand.	24.00
Phila., standard	22.76-26.79
Copper bear., E. Pa. furnace	22.00-23.00

GRAY FORGE

Valley furnace	15.50
Pitts., dist. fur.	16.00
Pittsburgh, del	16.63-17.13

CHARCOAL

Lake Sup., del. Chi.	23.04

SILVERY

Jackson County, O., or Pittsburgh furnace: 7%—$19.50; 8—$20; 9—$20.50; 10—$21; 11—$21.50; 12—$22; 13—$22.50; 14—$23; 15—$23.50; 16—24.

BESSEMER FERROSILICON

Jackson County, O., or Pittsburgh furnace: 10%—$21.50; 11—$22; 12—$22.50; 13—$23; 14—$23.50; 15—$24; 16—$24.50.

Iron Ore

LAKE SUPERIOR ORE

Gross ton, 51½%, Lower Lake Ports

Old range bess.	$4.30
Mesabi bessemer	4.65
Old range nonbess.	4.65
Mesabi nonbess.	4.50
High phosphorus	4.40

EASTERN LOCAL ORES

Cents, unit, del. E. Pa.

Foundry and basic, 56-63%, con. (nom.)	7.50
Copper-free low phos. 58-65%	nom.

FOREIGN ORE

Cents per unit, f.a.s. Atlantic ports (nom.)

Foreign manganiferous ore, 45-55% iron, 6-10% man.	8.00
No. Afr. low phos.	7.00
Swedish basic, 65%.	7.50- 8.00
Swedish low phos.	8.00
Spanish, No. Afr. basic, 50 to 60%.	7.00
Tungsten, spot, sh. ton unit, duty pd.	$10.75-11.00
N. F. fdy., 55%	7.00
Chrome ore, 48% gross ton c.i.f.	$16.50-17.50

Manganese Ore

(Nominal)

Prices, not including duty, cents per unit, cargo lots.

Caucasian, 52-55%.	nominal
So. African, 52%.	18 to 19 cts.
So. Afr., 49-51%	nominal
Indian, 48-50%	nominal

Refractories

FIRE CLAY BRICK

Per 1000 f.o.b. Works

First Quality

Pa., Ohio, Ill., Ky., Md., Ga., Mo.	$40.00
Alabama	43.00

Second Quality

Pa., Ohio, Ill., Ky., Md.	35.00
Missouri	35.00
Georgia, Alabama	35.00

MALLEABLE BUNG BRICK

All bases	45.00

SILICA BRICK

Pennsylvania	$40.00
Joliet, E. Chicago	49.00
Birmingham, Ala.	50.00

MAGNESITE BRICK

Per Net Ton, 9 x 4½ x 2½

Burned	$65.00
Unburned	55.00

CHROME BRICK

Per Net Ton

F.o.b. ship. point	$45.00

MAGNESITE

Dead burned grain, Chester, Pa., Baltimore bases, net	40.00
Domes, Chewelah, Wash., base	22.00

Fluorspar

85 to 5 per cent grade

Washed gravel, f.o.b. Ill., Ky., net ton, carloads	$11.50
Washed gravel, import duty paid tide, gross ton	$17.50

Semifinished Steel

Prices Per Gross Ton

BILLETS AND BLOOMS

4 x 4-inch base

Pitts., Chi., Cleve., open-hth. & bess,	$26.00
Philadelphia	31.75
Forging, Pitts., Chi.	31.00

SHEET BARS

Pitts., Cleve., Yong.	26.00
Chicago	26.00

SLABS

Pitts., Cleve., Yong.	26.00

WIRE RODS

Pitts., Cleveland	$35.00
Chicago	36.00

SKELP

All grades, Pitts.	1.50c-1.60c

Coke

Price Per Net Ton

BEEHIVE OVENS

Connellsville fur.	$2.00- 2.25
Connellsville fdry.	2.75
Connell, prem. fdry.	4.00
New River fdry.	6.00
Wise county fdry.	4.25- 5.00
Wise county fur.	3.50- 4.25

BY-PRODUCT FOUNDRY

Newark, N. J., del.	8.21- 8.81
Chi. ov., outside del.	7.50
Chicago, del.	8.25
New England, del.	10.00
St. Louis, del.	7.75
Birmingham, ovens	4.00
Indianapolis, del.	7.75
Ashland, Ky., ovens, Connell., basis	4.50
Portsmouth, ovens Connell. basis	4.50
Buffalo, ovens	7.50- 8.00
Detroit, ovens	8.00
Philadelphia, del.	8.50

Ferroalloys

(In dollars, except Ferrochrome)

*Ferromanganese, 78-82% tidewater, duty pd.	82.00
del. Pitts.	87.24
*Spiegeleisen, 19-20%, dom., fur., spot†	27.00
Ferrosilicon, 50%, frieght all., c. l.	74.50
Do, less carload	82.50
Do, 75 per cent	120-130.00

Spot, $5 a ton higher.

Silicomang., 2½ carb.	85.00
2% carbon	90.00
1% carbon	100.00
Ferrochrome, 66-70 chromium, 4-6 carbon, cts. lb. con. del.	9.50
Do, spot del.	10.00
Ferrotungsten, stand., lb., cont.	0.94- 1.00
Ferrovanadium, 35 to 40%, lb. cont., on analysis	2.60- 2.80
Ferrotitanium, c.l., prod. plant, frt. allow., net ton	137.50
Spot, 1 ton, frt., all., lb.	8.50
Do, under 1 ton	9.00
Ferrophosphorus, per ton, c. l. 17-19%, Rockdale, Tenn., basis; 18%, $2 unitage	50.00
Ferrophosphorus, electrolytic, per ton c. l., 23-26% f.o.b. Anniston, Ala., 24%, $2.75 unitage	65.00
Ferromolybdenum, stand. 50-60%, lb.	0.95
Molybdate, lb. cont.	0.80

†Carloads. Diff. to apply to quantity.

Bars

Third-Quarter Policy Limits Concessions to Preferred Consumers to July—Orders Lighter

BAR PRICES, PAGE 41

Pittsburgh—Carbon and alloy bars still are in heavy demand from the automotive and parts industries. Establishment of 1.60c, Pittsburgh, for third quarter is expected to result in an increase over prices some users had been paying. Preferred customers will be allowed to specify at 1.50c until July 31, for shipments to Aug. 15. Automotive spring stock is being quoted through third quarter at 1.75c, Pittsburgh.

Cleveland — The Cleveland bar producer is quoting 1.65c base, Cleveland, for July only. Some other sellers here quote 1.65c for the full third quarter, but will drop preferential prices usually given tonnage buyers, after July 31, making 1.65c the firm minimum. New business is well sustained. A substantial order was placed by a rivet interest. June specifications for one leading interest here were the best of any month in three and a half years.

Chicago—Steel bar producers have taken no action on prices for third quarter, continuing to quote 1.70c on spot July business. Despite the holiday interruption, sales and specifications have continued active. Farm implement manufacturers are increasing operations on repair parts. Rail steel bar demand at 1.50c continues in good volume from manufacturing consumers.

Boston—Commercial steel bar demand is light, although industrial specifications are fairly steady. Most consumers, covered at 1.60c, Pittsburgh, through this month, are extending coverage through the quarter.

Philadelphia — Bar specifications have tapered since June, as expected. Meanwhile, shipments continue substantial, with the price 1.60c, Pittsburgh, or 1.91c, Philadelphia. Common iron bars are 1.50c, Pittsburgh, or 1.81c, Philadelphia.

New York—Bar inquiry is holding better than most mills expected. Second quarter prices prevail for July delivery. Extension to cover the entire quarter is expected.

Cold-Finished Price Held To July Specifications

Cold Finished Prices, Page 41

Pittsburgh — Producers of cold-finished steel bars are not extending the 1.70c base price beyond July and apparently there has been no decision beyond that time. Announcement of 1.60c on hot-rolled bars for third quarter will mean an increase to some cold drawing accounts and it is possible cold-drawn may be advanced proportionately. The automotive trade is still active.

Tin Plate Rate To Be Advanced This Week

Tin Plate Prices, Page 41

Pittsburgh—Tin plate producers on the average scheduled three less turns last week owing to the July 4 holiday, and the average of operations in this district was off slightly to 90 per cent. However, this week the rate will advance again to 95 to 100 per cent. The outlook for the fruit and vegetable pack this year is considerably brighter than in 1932 at this time. Canmakers still are issuing heavy specifications, and a leading manufacturer has been receiving 80 to 100 carloads of tin plate daily for some time. Practically all producers are out of the black plate market, and one mill refuses to accept any further specifications for tin mill black. The base price of tin plate continues $4.25.

New York—The tin plate trade expects a price advance this month to apply for the remainder of the year. Due primarily to further sharp depreciation of the dollar abroad American tin plate prices now are below the lowest continental figure.

Plates

Oil and Other Tanks, Barges Take Large Tonnage—Preferential Price Terminates July 31

PLATE PRICES, PAGE 41

Cleveland—New orders for plates have tapered following the flurry of buying and specifying in the latter part of June. Shipments continue heavy. The Gulf Refining Co. has awarded 750 tons for tanks at Cleveland to Chicago Bridge & Iron Works, Chicago. For tanks and other equipment taking plates, the brewery industry accounted for more than 50 per cent of recent bookings by leading interests here. Some producers are booking plates at 1.60c only for July, with their price policy for the remainder of third quarter still unsettled. Others, including the leading interest, quote 1.60c for the full third quarter. These, however, will drop preferential prices, below 1.60c, to tonnage buyers July 31.

Pittsburgh—American Bridge Co. has closed on an order for an additional barge to six received in mid-June from the River Terminals Corp., New Orleans. The seventh barge requires 240 tons of plates. Dravo Contracting Co. has closed on a barge order for the Union Barge Line requiring 545 tons. Tank makers report heavier orders and inquiry, but in small lots. The price on plates is based at 1.60c, Pittsburgh, through third quarter. Preferred customers will be allowed to specify to July 31 for delivery to Aug. 15 at 1.50c, Pittsburgh, the higher price applying on later business.

Chicago—Plate shipments to miscellaneous consumers are expanding slowly, and tank fabricators also are busier. Fairly large tonnage have been involved in recent tank awards by oil companies, but new business is light. Plates are unchanged at 1.70c, Chicago, this figure applying only on prompt business.

Philadelphia—Car repair tonnage continues to come out, with miscellaneous specifications less active than a week ago. Interest in ship work is confined chiefly to naval ships scheduled for bidding July 26, although something definite is expected shortly with regard to the two tankers contemplated by the Sun Oil Co., requiring approximately 8000 tons of plates, shapes and bars.

New York—Demand for steel plates is less active, with miscellaneous tank work the principal feature. Second quarter prices are being quoted for July, with the expectation third quarter will be covered at the same rate.

Boston—Plate demand holds, with some gain in pending tonnage, tank work and close to 1000 tons for a 60-inch pipe line. Miscellaneous buying in small lots is moderately active.

Birmingham, Ala.—Plate fabrica-

tors note improvement in demand and operations are much better. Birmingham Tank Works is producing three 5500-barrel tanks for Freeport Sulphur Co., Freeport, Tex., and two tanks, 850 tons, for United States Industrial Alcohol Co., New Orleans.

Contracts Placed

8300 tons, tanks, Pan-American Petroleum & Transport Co., Texas City, Tex., to Chicago Bridge & Iron Works, Chicago. Reported July 3 as 7000 tons.

850 tons, two tanks for United States Industrial Alcohol Co., New Orleans, to Birmingham Tank Co., Birmingham, Ala.

800 tons, four barges for Lester F. Alexander Co., New Orleans, to Ingalls Iron Works Co., Birmingham, Ala.

750 tons, tanks, Ballantine brewery, Newark, N. J., to M. H. Treadwell Co., Midland, Pa.

750 tons, tanks, Gulf Refining Co., Cleveland, to Chicago Bridge & Iron Works, Chicago.

700 tons, three 5500-barrel tanks, for Freeport Sulphur Co., Freeport, Tex., to Birmingham Tank Co., Birmingham, Ala.

600 tons, tanks, Sinclair Refining Co., East Chicago, Ind., to Chicago Bridge & Iron Works, Chicago.

545 tons, barges for Union Barge Line, to Dravo Contracting Co., Pittsburgh.

300 tons, tank, Sinclair Refining Co., Houston, Tex., to Chicago Bridge & Iron Works, Chicago.

240 tons, additional barge for River Terminals Corp., New Orleans, to American Bridge Co., Pittsburgh; barge to be 175 x 40 x 9 feet, similar to six barges ordered in June, totaling 1425 tons of plates by the same buyer with the American Bridge Co.

Contracts Pending

1916 tons, liner plate for tunnels, metropolitan water district, Los Angeles; bids July 14.

400 tons, water tank, Columbia, S. C.; loan granted.

100 tons, two water tanks, County Urban Co., North Kansas City, Mo.

Unstated tonnage, 2500 steel riser plates, Norfolk & Western; bids July 19.

Unstated tonnage, oil terminal, including tanks, Carteret Store & Terminal Co. Inc., Chicago, on Rahway river near Carteret, N. J.

Strip

Little Test of New Price; Many Users Well Covered

Strip Prices, Page 41

Chicago — Producers of hot strip have adopted 1.75c, Chicago, for third quarter. The $5 advance on cold-rolled strip, instituted recently by an eastern producer, is expected to find little application this quarter since larger consumers have covered requirements at 1.80c to 2.00c, Pittsburgh-Cleveland. The 2.25c, price, an advance of $5 a ton over the recent maximum, however, is expected to be adopted. Shipments continue heavy.

Cleveland—Sales have slowed, as was expected following heavy purchases and specifications late last month. Shipments are holding up and some mills are behind schedules. Most consumers have not covered August or September requirements and new inquiries and orders are expected to develop the middle of this month. Though some business was covered for July at 1.60c, base, Pittsburgh, for hot-rolled strip, and 2.00c, base, Cleveland, for cold-rolled, these prices now have disappeared, and 1.65c and 2.25c, respectively, now apply for third quarter.

Pittsburgh—Sales have been made at 1.65c, Pittsburgh, for hot strip, and 2.25c, Pittsburgh or Cleveland, for cold-rolled. Nonintegrated strip producers are having difficulty getting shipments of billets fast enough for their heavy rolling. One strip mill here is considering starting its 14-inch mill, which has been inactive since 1929.

Philadelphia—Strip manufacturers will follow the lead of two producers in quoting 1.65c, Pittsburgh, on hot strip and 2.25c on cold-rolled strip for shipment by the end of the quarter, according to present indications. Following substantial releases in June, producers report new orders as the smallest in about six weeks.

Boston — While there has been some confusion among New England producers of cold-rolled strip as to when 2.45c, Worcester, would become general, most mills put it in effect at once on all spot business. Specifications during third quarter must be in by Sept. 15 to be shipped by Sept. 30.

Railroads

Brazil Buys 38,000 Tons; Repairs Are More Active

Track Material Prices, Page 41

United States Steel Products Co., export subsidiary of the United States Steel Corp. has booked an order from the Brazilian government for 38,000 tons of steel rails and track fastenings.

Releases of steel rails on contracts one to two years old are providing a small continuous backlog for rail mills at Chicago, on a light schedule. Ensley rail mill of the Tennessee Coal, Iron & Railway Co. starts July 10 on a three-week schedule, with 22,000 tons on books at the start. Pittsburgh rail mills have taken no new tonnage recently. Larger steel orders are coming out for repair purposes. The Pennsylvania has greatly increased its force at several shops. Track accessory releases are in larger volume.

Placing of 500 railroad cars in June brought the total for first half to 566 cars, compared with 359 for first half of 1932. Comparisons follow:

	1933	1932	1931	1930
Jan.	3	159	100	5,072
Feb.	0	35	50	17,027
March	5	105	2,166	6,118
April	50	0	2,798	1,997
May	8	60	20	13,92
June	500	0	1,910	998
6 Mo.	566	359	7,044	32,604
July		25	617	1,389
Aug.		5	1,304	1,111
Sept.		1,298	703	576
Oct.		0	980	4,116
Nov.		2	35	2,621
Dec.		50	11	2,729
Total		1,739	10,694	45,146

A number of locomotives have been ordered, namely, small, special types, and an order for cane cars for export to the Philippines has been entered. Plymouth Locomotive Works, Plymouth, O., has booked orders recently for 14 gasoline, gasoline-electric and diesel types, including three for export and eight for a railroad in Grant Park, Chicago, in connection with the Century of Progress exposition.

Hyman-Michaels Co., Chicago, has been awarded 425 tons of relaying rails for the federal engineer at Chicago. Pettibone Mulliken Co., Chicago, has been given an order for rails, switches and clips for a track system at the Cristobal dry dock, Panama.

Locomotives Placed

Delaware, Lackawanna & Western, three oil-electric switchers, to Ingersoll-Rand Co., New York; electrical equipment to General Electric Co., Schenectady, N. Y.

United Fruit Co., two locomotives, to Baldwin Locomotive Works, Eddystone, Pa.

Durham & Southern, one locomotive, to Baldwin Locomotive Works, Eddystone, Pa.

Navy, two 35-ton diesel-electric switch engines, to Atlas Car & Mfg. Co., Cleveland.

Car Orders Placed

Philippine railway, 60 cane cars, 10 of 30 tons capacity and 25 of 10 tons, to the Magor Car Corp., Passaic, N. J.

Bethlehem Steel Co. has been awarded approximately 105 tons of No. 24 galvanized copper-bearing steel roofing sheets and ridge roll sheets for Panama at $6386.90, delivered; bids May 16.

The new Municipal Auditorium, St Louis, Mo.

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DEDICATED to convention use and the gathering of thousands of persons, this new Municipal Auditorium in St. Louis is equipped with exceptional facilities for proper air conditioning—summer and winter. The City Fathers, anxious to avoid depreciation and costly repair, chose Granite City Copper Bearing Steel for all of the duct work required. Rust-resisting, corrosion-resisting—with three times the life of ordinary steel—Granite City Copper Bearing Steel is also easy to form, sturdy, economically priced .... For highest quality steel and prompt delivery, specify Granite City Steel for your sheet and plate requirements. Made at Granite City, Illinois—served by 29 railroads and the Mississippi River, better service is assured to the Mississippi Valley, the West and the Southwest.

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Structural Shapes

Awards Increased, with 15,500 Tons Placed for New York Central's Manhattan Viaduct — Fabricators Able to Obtain Plain Material at 1.60c Through Third Quarter

STRUCTURAL SHAPE PRICES, PAGE 41

New York—Contract for 15,500 tons of shapes for the New York Central railroad's west-side viaduct here, has been awarded to Post & McCord Inc., New York, who will furnish and direct subletting of the fabrication to the American Bridge Co., and Fort Pitt Bridge Works Co., Pittsburgh. The complete government building program includes comparatively few large projects but many small ones in New York and New Jersey.

Cleveland — Fabricators here are bidding on 800 tons for buildings for the New York state fair grounds, at Syracuse. Cleveland has postponed bids on an incinerator requiring 500 tons of shapes and 300 tons of concrete bars from July 10 to July 27. Awards during the week were light, including 150 tons for an industrial plant at Toledo, O. Plain material continues 1.60c, base, Pittsburgh.

Pittsburgh—Structural shape fabricators are obtaining more inquiry, and note a stronger trend in miscellaneous orders. Few sizable jobs are up, but prospects still are favorable. Contract for a 155-ton Pennsylvania state bridge at Lemoyne has been closed by a local fabricator. Fabricators now are able to get full third quarter protection at 1.60c, Pittsburgh, on structural shapes.

Chicago—Structural shape inquiries and awards continue light. Fabricators look for little improvement prior to the release of public work. For a Wisconsin dam 600 tons of piling has been placed. Pending highway bridges in Oklahoma will take 1200 tons of shapes, while a Milwaukee subway involves 600 tons.

Boston—For structural steel in place 3.5c was bid by the contractor on the Housatonic bridge, Connecticut, taking about 530 tons. The fabrication contract went to a Buffalo interest. More public and small structural projects are active. Plain structural material continues at 1.60c, Pittsburgh.

Philadelphia—While the Pennsylvania railroad's plans for completing its electrification program will not result in placing much new tonnage, they may lead to the release of more than 30,000 tons long since placed on fabricators' books. An additional amount has been delivered but not erected. Miscellaneous construction is dull.

James G. Dempsey, Philadelphia, is low on structural steel inspection, 6600 tons, federal building, St. Louis, at 8.29c a ton.

Contracts Placed

15,500 tons, viaduct, New York Central railroad, St. John's Park terminal to West 18th street, Manhattan (New York; to Post & McCord Inc., New York, who will sublet to American Bridge Co., and Fort Pitt Bridge Works Co., Pittsburgh.

1550 tons, beam spans, various locations, Missouri Pacific railroad, to American Bridge Co., Pittsburgh.

1100 tons, furnace building for M. W. Kellogg Co., Texas City, Tex., to Ingalls Iron Works, Birmingham, Ala.

1000 tons, passenger station, Southern Pacific Lines, Houston, Tex., to Houston Structural Steel Co., Houston.

790 tons, Frick Museum building, New York, to George A. Just Co., Long Island City, N. Y.; through Marc Eidlitz & Son Inc.

750 tons, building, Interboro Brewery, Brooklyn, N. Y., to Berkshire Structural Steel Co., Brooklyn, N. Y.

675 tons, building, Congoleum-Nairn Corp., Marcus Hook, Pa., to Belmont Iron Works, Philadelphia.

600 tons, piling, Wisconsin Power & Light Co. dam extension, Prairie du Sac, Wis.; through Jutton-Kelly Co., Milwaukee, general contractor, to Inland Steel Co., Chicago.

530 tons, 300-foot span steel truss bridge, Housatonic river, Newton and Southbury, Conn., to Lackawanna Steel Construction Corp., Buffalo; Lee Construction Co., Boston, general contractor.

300 tons, building for mine head shafts, Lead, S. Dak., to Worden-Allen Co., Milwaukee.

270 tons, storage building, Muskegon, Mich., to R. C. Mahon Co., Detroit.

269 tons, bridges in four counties in Colorado, to unnamed interest.

525 tons, pier for Key System, Ltd., Oakland, Calif., to McClintic-Marshall Corp., San Francisco; 140 tons of galvanized sheets to Guilfoy Cornice Works, San Francisco.

200 tons, bridge, Hinsdale, Ill., to Midland Structural Steel Co., Chicago.

160 postoffices, Union City, N. J., to Bethlehem Fabricators Inc., Bethlehem, Pa.; through Garace & Castagna.

155 tons, Pennsylvania state highway bridge, Lemoyne, Pa., to Jones & Laughlin Steel Corp., Pittsburgh.

150 tons, building, McEwan Knitting Mills, Burlington, N. C., to Carolina Steel & Iron Co., Greensboro, N. C.

150 tons, plant annex for Libbey-Owens-Ford Glass Co., Toledo, O., to McClintic-Marshall Corp., Bethlehem, Pa.

150 tons, bridge, Sangamon county, Illinois, to Pittsburgh-Des Moines Steel Co., Pittsburgh; sublet to Continental Bridge Co., Chicago.

145 tons, highway bridge, South Langhorne, Pa., to Belmont Iron Works, Philadelphia.

125 tons, bridge, Noblesville, Ind., to Pan-American Bridge Co., New Castle, Ind.

112 tons, St. Albert college, Oakland, Calif., to McClintic-Marshall Corp., San Francisco.

100 tons, miscellaneous structurals and plates, United States engineer, Huntington, W. Va., bulk to American Bridge Co., Pittsburgh; bids June 8.

100 tons, grandstand, Cook county, Illinois fair grounds, to Duffin Iron Works, Chicago.

Shape Awards Compared

	Tons
Week ended July 8	**25,406**
Week ended July 1	**13,290**
Week ended June 24	**17,373**
This week in 1932	**8,172**
Weekly average, 1932	**14,285**
Weekly average, 1933	**15,295**
Weekly average, June	**12,878**
Total to date, 1932	**440,079**
Total to date, 1933	**428,276**

Contracts Pending

1210 tons, tunnel lining for metropolitan water district, Los Angeles; bids July 14.

1200 tons, highway bridges Oklahoma.

800 tons, horticultural and farm machinery buildings, State Fair Industrial Exhibit Authority, Syracuse, N. Y.; bids July 5.

650 tons, warehouse, Manhattan Refining Co., New York.

600 tons, subway, Milwaukee, for Chicago, Milwaukee, St. Paul & Pacific railroad.

450 tons, several postoffices; R. W. Erickson, Philadelphia, inquiring for bids for estimating purposes.

425 tons, 7-story building, Southeastern Merchandise Market Inc., Charlotte, N. C.; Goode Construction Co., Charlotte, general contractor.

225 tons, highway bridges, Indiana.

170 tons, piling, dock for Dunn Sulphite Co., Port Huron, Mich.

150 tons, bridge superstructure, Lynch-Cumberland road, Harlan county, Kentucky; Pittsburgh-Des Moines Steel Co., Pittsburgh, low.

Unstated tonnage, federal projects, bids on following dates: Portland, Me., buildings, United States marine hospital July 25; Memphis, Tenn., laundry building and surgical unit, July 24; McAllen, Tex., postoffice, Aug. 9; Princeton, W. Va., July 25.

The majority of producers of coated abrasive products who have accepted simplified practice recommendation R89-32 have expressed their intention to extend their present methods of identifying the simplified lines by including statements in catalogs and other trade literature, according to the bureau of standards.

Concrete Bars

Tonnage Awarded Increases, Including 1700 Tons for Pennsylvania Railroad's Baltimore Piers—Mills Reluctant to Quote Beyond July at Current Prices

REINFORCING BAR PRICES, PAGE 41

Philadelphia—Featuring concrete bar demand is an award of 1700 tons for the Pennsylvania railroad's Baltimore piers. This contract went to the American Steel Engineering Co., with material to be supplied by the Youngstown Sheet & Tube Co. The Pennsylvania railroad's plans for going ahead with its electrification work hold promise of a resumption of the west-side development, for which approximately 2000 tons of bars are to be purchased.

Pittsburgh — The price of 1.75c, Pittsburgh, on cut lengths of new billet steel reinforcing bars is continuing for an indefinite period into the third quarter, but full quarter coverage is not being granted by producers. Small-lot specifications still are numerous.

Chicago — Reinforcing bar producers await starting of highway construction for which public funds have been made available. This work will involve a large tonnage, while considerable business is expected from other forms of public building. Private projects have involved only small lots recently. Prices are steady at 1.75c for billet bars and 1.50c for rail steel, on prompt business.

Cleveland—Concrete bars continue 1.50c, base. Cleveland, for mill lengths of new billet steel, for July only. Makers here considered raising the price $3 a ton to 1.65c, placing the bars on the same basis as commercial steel bars, but no action is likely to be taken this month. Orders are small, the largest being the Gulf Refining Co.'s award of 100 tons for a gas tank retaining wall, Cleveland.

New York—Lead by 800 tons for the New York Central railroad's west-side viaduct, concrete reinforcing steel lettings are fairly active. Small lots are steadier at 1.75c, Pittsburgh, for cut lengths.

Boston—Highway mesh prices are holding fairly well at the recently announced advance. Deformed bars, however, are inclined to be easy. For bars in place, Housatonic bridge, Connecticut, 3.00c was bid by the successful contractor.

Contracts Placed

2200 tons, contract No. 5, Yerba Buena island crossing, San Francisco-Oakland bridge, San Francisco, to Pacific Coast Steel Corp., San Francisco.

1700 tons, Pennsylvania railroad piers, Baltimore, to American Steel Engineering Co., Philadelphia, with material to be supplied by the Youngstown Sheet & Tube Co.

800 tons, viaduct, New York Central railroad, St. John's Park terminal to West 18th street, Manhattan (New York), to Kalman Steel Corp., Bethlehem, Pa.; James Stewart & Co., Inc., New York, general contractor.

378 tons, highway work and bridges in ten counties in Colorado, to unnamed interest.

269 tons, Ballona creek conduit for Los Angeles county, California, to Concrete Engineering Co., Los Angeles.

250 tons, highway, Yonkers, N. Y., Westchester County Park commission, to Concrete Steel Co., New York; A. W. Banko Co., general contractor.

135 tons, mesh, highway, Farmington-West Hartford, Conn., Farmington cut-off, section B, to American Steel & Wire Co., Pittsburgh; Arborio Road Construction Co., general contractor.

100 tons, Kress store, Berkeley, Calif., to Gunn, Carle & Co., San Francisco.

Contracts Pending

2500 tons, naval base work, Pearl Harbor, Hawaii.

2400 tons, additional work for Pennsylvania railroad piers, Baltimore; Raymond Concrete Pile Co., New York, contractor.

1330 tons, Rio Grande conservancy district, New Mexico; Colorado Fuel & Iron Co., Denver, low.

280 tons, radio shrine, Royal Oak, Mich., for Rev. Charles Coughlin.

120 tons, building, Southeastern Merchandise Market Inc., Charlotte, N. C.; Goode Construction Co., Charlotte, general contrator.

Use of Micro-Tessar short-focus lenses for low-power photomicrography is outlined in an illustrated folder recently published by the Bausch & Lomb Optical Co., Rochester, N. Y. Specifications and prices for the lenses are appended.

Concrete Awards Compared

	Tons
Week ended July 8	5,832
Week ended July 1	5,945
Week ended June 24	3,067
This week, 1932	3,593
Weekly average, 1932	3,920
Weekly average, 1933	3,165
Weekly average, June	2,406
Total to date, 1932	118,890
Total to date, 1933	89,182

Spiegeleisen Advanced

Ferroalloy Prices, Page 42

Following the advance in ferromanganese last week, spot domestic spiegeleisen, 19 to 21 per cent, has been increased $3 a ton to $27, furnace. The ferromanganese advance brought the market to $82, eastern seaboard, an increase of $10 in the spot price, and $14 in the contract price which had prevailed throughout the greater portion of the first half. The new price applies to third quarter only.

Steel Wages Up as District Variations Delay Code

(*Concluded from Page* 12)

check progress and suggest revision of the code, following the precedent in the textile code.

The Electric Hoist Manufacturers' association has appointed a committee to draft a code for its industry, the committee including: F. A. Hatch, president, Shepard Niles Crane & Hoist Corp., Montour Falls, N. Y.; F. F. Seaman, general manager, hoist and crane division, Robbins & Myers Sales Inc., Springfield, O.; and J. G. Worker, general sales manager, American Engineering Co., Philadelphia.

More than 300 officials of General Electric Co. distributors from all 48 states have been summoned to a three-day conference at the General Electric plant at Bridgeport, Conn., starting Aug. 7, to formulate plans for tying in with the recovery act.

Flannery Wins Tax Refund

The bureau of internal revenue has announced a refund of overassessments of income taxes to the Flannery Bolt Co., Pittsburgh, for 1917 amounting to $39,703.68 and for 1918 amounting to $70,592.64.

Orders Barrels From Murray

Victor Brewing Co., Jeannette, Pa., has placed an order for 2000 insulated steel barrels with Murray Mfg. Co., Detroit.

Pipe

Discounts Reduced, Lifting Steel Pipe Prices $5 to $7 a Ton —Sizes Are Reclassified

PIPE PRICES, PAGE 41

Pittsburgh—Higher net prices on steel pipe now are in effect following a reduction in discounts effective July 1. The base on steel pipe remains $200 per net ton, but on merchant casing, wrought steel pipe, line pipe and steam gas and water pipe, jobbers' carload discounts have been reduced. The advances are $5 to $7 a ton, with the exception of sizes over 6-inch, discounts on which are unchanged. Certain changes have been made in the reclassification of sizes. Lap weld sizes formerly 2½ to 6-inch, inclusive, now are represented by two size classifications. Line pipe formerly 2½ to 6-inch, inclusive, has been divided into two size classes. Changes have been made in the reclassification of extra strong plain ends, both lap and butt weld. On standard pipe, 1 to 3-inch, jobbers' carload discounts, Pittsburgh and Lorain, O., basis, now are 67½ off on black, and 58½ on galvanized. Demand for tubular products is improving. Wheeling Steel Corp. started another butt weld furnace at its Benwood plant July 5.

Chicago—A large tonnage of cast iron pipe is involved in various types of work for which funds are to be asked of the federal government. Delay of several weeks is expected before much of this construction can get under way, so that pipe orders are expected to be deferred until August or September.

Boston—Bids are in on approximately 1000 tons of steel and 2000 tons of cast pipe with the metropolitan district commission, Boston. United States Pipe & Foundry Co., Burlington, N. J., is low on about 825 tons for Warwick, R. I. Several hundred tons are being placed by Sturbridge, Mass. Old Lyme, Conn., will ask bids soon on close to 500 tons. Prices are steadier.

New York—Cast pipe demand is dull, eastern foundries operating at 40 to 50 per cent. Prices are untested on substantial tonnages. Hudson river hospital water line, Poughkeepsie, N. Y., bids July 26, will take about 500 tons. Approximately 580 tons for White Plains, N. Y., is expected out shortly.

Steel pipe inquiry is featured by approximately 3000 tons, miscellaneous sizes for the Pan-American Petroleum Co., Texas City, Tex. Lycoming Gas Co. is inquiring for 2500 tons of 10 and 12-inch for installation in upstate New York. Frederick Snare Corp., New York, has awarded approximately 600 tons additional for the Rip Van Winkle bridge, Hudson, N. Y., to Bethlehem Steel Co.

Cleveland—Mills have substantial backlogs for July rolling, on specifications released at the close of June. Jobbers have been most active, as new construction work here requiring large tonnages are lacking. Jobbers' carload discounts on butt-weld and lapweld pipe have been reduced; the increase in actual prices ranging up to $7 a ton.

Birmingham, Ala.—Orders for cast pipe have improved. Louisville, Ky., awarded 2400 tons of various sizes to the United States Pipe & Foundry Co.

Cast Pipe Placed

100 tons, 16-inch, Yonkers, N. Y., to Donaldson Iron Works, Smaus, Pa.

Steel Pipe Pending

Unstated tonnage, 4750 seamless steel boiler tubes, Mare Island, Calif., navy yard; bids July 18.

Wrought Pipe Placed

Unstated tonnage, 21,000 feet, 2 to 3-inch, state hospital, Benton, Ark., to Reading Pipe Co., Reading, Pa.; through Central Supply Co., Little Rock, Ark.; McEachin & McEachin, Little Rock, general contractors.

Cast Pipe Pending

7740 tons, 6 to 12-inch class 250, Los Angeles; American Cast Iron Pipe Co., and National Cast Iron Pipe Co., Birmingham, Ala., United States Pipe & Foundry Co., Burlington, N. J., low on 2340 tons, 1600 tons and 2300 tons, respectively; R. D. Wood & Co., Philadelphia, low on 1500 tons.

4500 tons, 4 to 12-inch, County Urban Co., North Kansas City, Mo.; loan granted.

1670 tons, 6-inch, pipe line, Shell Petroleum Corp., Lake Charles, La.

1595 tons, 6 and 8-inch class 150, San Francisco; Central Foundry Co., Birmingham, Ala., low.

825 tons, 16-inch and under, Warwick, R. I.; United States Pipe & Foundry Co., Burlington, N. J., low.

500 tons, 12-inch and under, water line, Hudson river state hospital, Poughkeepsie, N. Y.; bids July 26.

450 tons, estimated, 6 and 8-inch, Old Lyme, Conn.; bids expected soon.

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Bolt, Nut Buying Heavy: Railroads Taking More

Bolt, Nut, Rivet Prices, Page 41

Bolt, nut and rivet buying continues strong and producers are operating at a high rate. Some railroad car repair orders have been received but automotive buying still leads. Interest is manifested in the proposed tunnel development of the Pennsylvania at Baltimore, which will take a substantial tonnage.

Bolts and nuts are quoted unchanged at 73 off and rivets at 2.50c, Pittsburgh, for large sizes, for July specification.

Sheet Bars, Billets $26 For Third Quarter

Semifinished Prices, Page 42

The announcement that $26, Pittsburgh, would apply for sheet bars and rerolling billets through the third quarter has met with the approval of consumers and has tended to discourage speculative commitments. An advance in wire rods above the present $35 base is expected to be made shortly. Forging billets are $31, but full third quarter coverage is not being granted by producers.

More Iron Ore Boats Out; Estimate 20,000,000 Tons

Iron Ore Prices, Page 42

Cleveland — Final figures show Lake Superior iron ore shipments in June were 1,280,669 tons, or 80,000 tons more than the estimate presented in STEEL last week. The increase in June over the month last year was 448 per cent. Shipments to July 1 this year were 2,264,413 tons, a gain of 482.9 per cent over the period last year.

Some ore shippers now estimate the movement this year will be at least 20,000,000 tons. By the middle of July 116 ore vessels are expected to be in commission, compared with 40 June 15, and 30 last mid-summer.

The market is a little more active, some additional tonnages for steelworks being under negotiation, and one consumer having added substantially to a recent purchase.

Revised simplified practice recommendation R-53-32, on steel reinforcing spirals, has been made available in printed form by the simplified practice division of the bureau of standards. It may be obtained for 5 cents per copy from the superintendent of documents, government printing office, Washington.

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Pig Iron

Higher Production Costs To Force Further Price Boost—Advance Contracting Lags

Pig Iron Prices, Page 42

Pittsburgh—The market lacks sizable purchases. Roll producers still are active purchasers. Ingot mold schedules still are full and show no sign of decline. Sellers are accepting business for July shipment only, anticipating an advance in price based on higher manufacturing costs.

Chicago — Demand retains its recent activity and shipments are expected to maintain or better the June rate during this month. The $16 furnace price on No. 2 foundry and malleable is well observed. Higher silicon differentials are looked for prior to an advance in base prices.

Cleveland—Shipments in the first half of July will exceed those in the corresponding period last month. Some radiator manufacturers have large order books for fall delivery, and will require considerably more iron than they have purchased. Currently, the market is quieter, sales during the week dropping to approximately 3000 tons, and the price remaining $15.50, base, Cleveland, for local and outside delivery. Corrigan, McKinney Steel Co. will have its fourth blast furnace in production this week.

Boston—Prices are firm and unchanged with sellers reluctant to contract far ahead. Nearby stocks of iron are lower, including foreign.

Philadelphia — With most large buyers under contract, sales comprise small tonnages. Specifications against contracts are holding well. Domestic producers are not quoting beyond Aug. 1 on new tonnage.

Buffalo—Republic Steel Corp. has lighted another blast furnace and the Port Colborne, Ont., stack of the Canadian Furnace Co. Ltd. is operating, making six now operatnig in this district. Buying is light with inquiries in the same proportion.

Birmingham, Ala. — Sales are mounting and need for greater production is noted. Tennessee Coal, Iron & Railroad Co. has blown in its second large blast furnace at Fairfield on basic, and a second at Ensley. Republic Steel Corp. is to blow in a second furnace at Thomas this month and two other producers are planning to add one furnace each to their operations shortly.

St. Louis—Buying continues active and prices firm. Shipments are holding up well. One sales agency reports total sales so far this year within a few hundred tons of the aggregate for 1931 and 1932 combined.

Toronto, Ont.—Prices are steady at the recently revised levels. Buying is moderately good, with sellers looking for improved contracting in the last quarter.

Cncinnati — Demand is strong, mainly for small lots. Southern iron interests continue to book ahead, while northern iron sellers have limited advance contracting to Aug. 1.

New York—Although sellers expect higher prices effective Aug. 1, current demand is light. Shipments are being delayed at some points due to shortage of cars.

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Phoenix "A" Rolls
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Phoenix Tube Mill Rolls
Phoenix Chill Rolls
Phoenix Nickel Chill Rolls
Phoenix Steel Rolls
Phoenix Sand Rolls

PHOENIXLOY
(Uniformly Hard)

PITTSBURGH ROLLS CORPORATION
» » » » PITTSBURGH, PA. « « « «

Wire

Advance of $5 Per Ton for Third Quarter—Buying Active

Wire Prices, Page 41

Cleveland—Leading wiremakers have advanced wire products $5 a ton,for third quarter. Wire nails and cement coated nails now are $2.10; galvanized nails, $3.60. Polished staples have been raised to 2.80c; galvanized staples to 3.05c; and galvanized barbed wire to 2.60c. Woven wire fencing also is up $5 a ton to $55, base. Bale ties have been increased $6 a ton to $45, base. An advance in plain wire over the 2.10c current price is expected. Later the increases may not be fully tested for several weeks as shipments will continue heavy through this month on second quarter specifications. New orders for plain wire continue ac-

Chicago—Most wire products are quoted $5 a ton above recent levels, with manufacturers' wire unchanged at 2.20c. Wire nails now are $2.20 per keg in carload lots. These prices will apply through third quarter.

Shipments and specifications continue heavy.

Pittsburgh—Effective July 3, wire producers have named the following higher prices, all base Pittsburgh-Cleveland: Wire and cement coated nails $2.10 per keg; polished staples 2.80c; galvanized staples 3.05c; galvanized barbed wire 2.60c. Woven wire fencing is up to $55. Bright plain wire for manufacturing purposes is unchanged at 2.10c and spring wire 3.10c.

Baltimore—Cables for a suspension bridge, Gloucester Point-Yorktown, Va., bids July 14, will take 500 tons of wire.

Boston—Discarding the month-to-month basis, leading sellers are booking business through third quarter at $5 a ton advance on nails, staples, barbed wire and fence. Manufacturers' and galvanized wire are unchanged. Bright wire holds at 2.20c, Worcester.

Coke

Beehive Prices Steady as Some By-Product Advances

Coke Prices, Page 42

Premium beehive foundry coke price has not changed and $4, ovens, appears steady. This is despite some strength in common grades of foundry coke which are now around $2.75, Connellsville ovens. By-product coke is in heavy demand in the Pittsburgh district and one interest has been considerably short of its requirements. Furnace coke is quoted at $2, Connellsville ovens.

Chicago producers are taking new contracts at $7.50, ovens, for outside delivery, and $8.25, delivered, Chicago, an advance of 50 cents. These prices are for July only.

Steel Improves Safety Records

STEEL industry had a better safety record during 1932 than many other large industries according to a report by the National Safety Council, Chicago. Steel plants reduced their rate of frequency of disabling injuries last year and also made the largest reduction in average severity rate since 1927. Frequency declined 5 per cent from 1931, and severity dropped 21 per cent. Since 1926 deaths and permanent disability accidents declined 51.4 per cent, while temporary disability cases declined 65.3 per cent.

Last year 121 steel plants with an exposure of almost 213,000,000 man hours averaged 10.19 in frequency and 1.81 in severity. Corrigan, McKinney Steel Co., Cleveland, had the best 1932 record in accident frequency among large plants as well as in the severity of accidents. Bethlehem Steel Corp., Steelton, Pa., plant made the greatest improvement in frequency rate since 1930 among large units, 67 per cent. South Chicago, Ill., works, Republic Steel Corp. had the largest exposure among midle-size units with a perfect record, 1,100,000 man hours, while the Haynes-Stellite Co., Kokomo, Ind., worked more hours than any other small unit with a perfect record. Seamless tube mills of Pittsburgh Steel Co. at Monessen, Pa., had a perfect record in 1931 and 1932.

Rounds Squares Flats Hexagons

BL

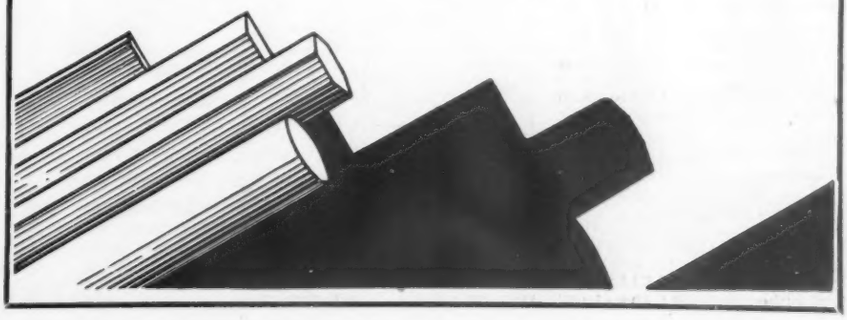
Cold Drawn Steels

If you want to add character to the machined appearance of your screw machine parts we invite your attention to Ultra-Cut Screw Stock, the master steel for high speed production. A Bessemer steel closely supervised in its manufacture and developed solely for high speed screw machine production. The free machining character of this steel will permit increased production, longer life of tools between grindings, closer adherence to manufacturing tolerance and present a machined surface that will be smooth and bright. You and your machine operators will like this steel.

Bliss & Laughlin, Inc.

Harvey, Ill. Buffalo, N. Y.

Sales Offices in all principal cities



Scrap

Prices Moving Upward—Blast Furnace Grades in Demand—Much Tonnage Moves By Water

Pittsburgh—An advance of 25 cents a ton in heavy melting steel makes the market now $11.75 to $12.75. Last week $12.25 was paid on 8000 to 10,000 tons for shipment to Donora, Pa. Dealers are wary of blast furnace business now that the Steubenville, O., mill has come into the market on blast furnace scrap at $10. This is an advance of $1.50 over previous offers in the immediate Pittsburgh district. Baltimore & Ohio is closing July 10 on 8370 tons of scrap. Norfolk & Western is closing on about 4000 tons, July 13 at Roanoke, Va.

Weirton Steel Co. is in the market again for tonnage, despite its recent large purchases of Baltimore & Ohio and Southern railroad scrap from dismantled cars. National Tube

IRON AND STEEL SCRAP PRICES

Corrected to Friday night. Gross tons delivered to consumers, except where otherwise stated

HEAVY MELTING STEEL

Birmingham	8.00 to 9.00
Boston, dealers	6.00 to 6.50
Buffalo, No. 1	10.00
Buffalo, No. 2	8.75 to 9.25
Chicago	9.50 to 10.00
Cleve., No. 1	9.50 to 10.00
Cleve., No. 2	9.00 to 9.50
Det., No. 1	8.50 to 9.00
Det., No. 2	7.50 to 8.00
E. Pa., del. mill	10.00
E. Pa., No. 2 del.	9.00
Federal, Ill.	8.25 to 8.75
Granite City, Ill.	7.25 to 7.75
N. Y., deal. R. R.	7.50
N. Y., deal. No. 2	6.50
N. Y. deal. yd.	2.50 to 3.00
Pitts., No. 1	11.75 to 12.25
St. L. No. 1 del.	8.25 to 8.75
Valleys, No. 1	12.00 to 12.50

COMPRESSED SHEETS

Buffalo, dealers	8.75 to 9.25
Chi. (Factory)	8.50 to 9.00
Cleveland	9.00 to 9.50
Detroit	8.50 to 9.00
E. Pa. new mat.	8.00 to 9.00
Pittsburgh	11.75 to 12.25
Valleys	11.50 to 12.00

BUNDLED SHEETS

Buffalo	5.00 to 5.50
Cincinnati, del	5.00 to 5.50
Cleveland	7.00 to 7.50
Eastern Pa.	7.00 to 7.50
Pittsburgh	10.75 to 11.25
St. Louis	4.50 to 5.00

SHEET CLIPPINGS LOOSE

Chicago	4.00 to 4.50
Cincinnati	3.00 to 3.50
Detroit	4.00 to 4.50
St. Louis	4.00 to 4.50

STEEL RAILS SHORT

Birmingham	10.50 to 11.00
Boston, dealers	5.00 to 5.50
Buffalo	12.00 to 12.50
Chicago (3 ft.)	11.00 to 11.50
Chicago (2 ft.)	11.50 to 12.00
Cincinnati, del.	11.00 to 11.50
Detroit	10.50 to 11.00
Pitts. (open-hearth, 3 ft. and less)	12.50 to 13.00
St. Louis	10.50 to 11.00

STOVE PLATE

Birmingham	7.00 to 7.50
Boston, dealers	2.50 to 2.75
Buffalo	8.75 to 9.00
Chicago, net	7.50 to 8.00
Cinci., deal. net	5.00 to 5.50
Detroit, net	4.00 to 4.50
Eastern Pa.	7.50
N. Y. deal. Fdry.	5.00
St. Louis	7.00 to 7.50

COUPLERS, SPRINGS

Buffalo	11.00 to 11.50
Chicago	10.50 to 11.00
Eastern Pa.	11.00 to 12.00
Pittsburgh	13.50 to 14.00
St. Louis	8.50 to 10.00

ANGLE BARS—STEEL

Chicago	10.50 to 11.00
St. Louis	9.00 to 9.50

LOW PHOSPHORUS

Buffalo, billets and bloom crops	10.50 to 11.50
Cleveland bil. and bloom crops	12.00 to 13.00
Eastern Pa.	12.00 to 13.00
Pittsburgh billet bloom crops	13.75 to 14.25
Pitts., sheet bar crops	13.75 to 14.25

FROGS, SWITCHES

Chicago	9.50 to 10.00
St. Louis	9.50 to 10.00

SHOVELING STEEL

Chicago	9.50 to 10.00
Cleveland	6.25 to 6.50
St. Louis	8.50 to 9.00

RAILROAD WROUGHT

Birmingham	7.00 to 7.50
Boston, dealers	2.00 to 2.50
Buffalo, No. 1	6.50 to 7.00
Buffalo, No. 2	10.50 to 11.00
Chi., No. 1, net	8.50 to 9.00
Chi., No. 2	9.50 to 10.00
Cincl., No. 2	7.75 to 8.25
Eastern Pa.	10.50 to 11.50
N. Y., No. 1 deal.	5.50 to 6.00
Pitts., No. 1	11.75 to 12.25
St. Louis, No. 1	6.00 to 6.50
St. Louis, No. 2	8.00 to 8.50

SPECIFICATION PIPE

Boston	3.00 to 4.00
Eastern Pa.	7.50 to 8.50
N. Y., deal.	3.25 to 3.75

BUSHELING

Buffalo, No. 1	8.75 to 9.25
Chicago, No. 1	7.50 to 8.00
Cinci., No. 1 deal.	5.50 to 6.00
Cinci., No. 2	2.75 to 3.00
Cleve., No. 2	7.00 to 7.25
Det., No. 1 new	7.25 to 7.75
St. Louis, No. 1	5.25 to 5.75
Val. new No. 1	11.00 to 11.50

MACHINE TURNINGS

Birmingham	3.00 to 3.25
Boston, dealers	2.75 to 3.00
Buffalo	6.25 to 6.50
Chicago	5.50 to 6.00
Cinci., deal.	4.50 to 5.00
Cleveland	6.75 to 7.00
Detroit	5.25 to 5.75
Eastern Pa.	7.00 to 7.50
N. Y., deal.	2.00 to 2.50
Pittsburgh	8.75 to 9.25
St. Louis	3.00 to 3.50
Valleys	8.75 to 9.25

BORINGS AND TURNINGS
For Blast Furnace Use

Boston, dealers	3.00 to 3.25
Buffalo	6.50 to 7.00
Cinci., deal.	4.50 to 5.00
Cleveland	7.25 to 7.50
Detroit	6.00 to 6.50
Eastern Pa.	7.00
N. Y., deal.	3.00 to 3.25
Pittsburgh	9.00 to 9.50

CAST IRON BORINGS

Birming., chem.	8.50 to 9.50
Birming., plain	3.00 to 3.25
Boston, chem.	5.50 to 6.00
Boston, dealers	1.00 to 1.25
Buffalo	5.75 to 6.50
Chicago	5.75 to 6.25
Cinci., deal.	4.50 to 5.00
Cleveland	7.25 to 7.50
Detroit	6.00 to 6.50
Eastern Pa.	7.00
E. Pa., chem.	10.00 to 12.00
N. Y., deal.	3.00 to 3.25
Pittsburgh	9.00 to 9.50
St. Louis	3.50 to 4.00

PIPE AND FLUES

Cinci., deal.	4.00 to 4.50

RAILROAD GRATE BARS

Buffalo	5.00 to 5.50
Chicago, net	7.50 to 8.00
Cincinnati	5.00 to 5.50
Eastern Pa.	7.50
N. Y., deal.	4.00 to 4.50
St. Louis	6.00 to 6.50

FORGE FLASHINGS

Boston, dealers	3.50 to 4.00
Buffalo	8.25 to 8.75
Cleve. ov. 10 in.	8.25 to 8.50
Detroit	6.50 to 7.00

FORGE SCRAP

Boston, dealers	3.00 to 3.50
Chicago (heavy)	11.50 to 12.00
Eastern Pa., del.	8.00 to 9.00

ARCH BARS, TRANSOMS

Chicago, net	8.00 to 8.50
St. Louis	8.50 to 9.00

AXLE TURNINGS

Boston, deal.	3.00 to 3.50
Buffalo	7.50 to 8.00
Chi., elec. fce.	8.00 to 8.50
Cleveland	6.75 to 7.00
Eastern Pa., del.	8.50
St. Louis	4.00 to 4.50

STEEL CAR AXLES

Birmingham	9.00 to 9.50
Boston, ship. pt.	8.00 to 8.50
Buffalo	10.00 to 11.00
Chicago, net	11.50 to 12.00
Eastern Pa.	14.50
St. Louis	9.25 to 9.75

SHAFTING

Boston, ship. pt.	9.00 to 9.25
Eastern Pa.	14.00 to 15.00
N. Y., deal.	9.25 to 9.75
St. Louis	7.50 to 8.00

CAR WHEELS

Birming., iron	9.00 to 9.50
Boston, iron deal.	5.50 to 6.00
Buffalo, iron	8.00 to 9.00
Buffalo, steel	11.00 to 11.50
Chicago, iron	9.50 to 10.00
Chi., rolled steel	10.50 to 11.00
Cincinnati, iron	7.50 to 8.00
E. Pa., iron	11.00
E. Pa., steel	11.00 to 12.00
Pitts., iron	11.00 to 11.50
Pitts., steel	13.00 to 13.50
St. Louis, iron	8.00 to 8.50
St. Louis, steel	9.50 to 10.00

NO. 1 CAST SCRAP

Birmingham	8.00 to 8.50
Boston, No. 2	3.75 to 4.00
Boston, textile	7.50 to 8.00
Buffalo, cupola	9.50 to 10.00
Buffalo (mach.)	10.00 to 11.00
Cleve. cupola	10.00 to 10.50
Chi., mach. net	8.75 to 9.25
Chi., railroad net	8.50 to 9.00
Cinci., mach. cup.	8.25 to 8.75
Cleve. cupola	8.50 to 9.50
Detroit, net	8.50 to 9.00
E. Pa., cupola	10.50 to 11.50
N. Y., cup. deal.	6.00 to 6.50
N. Y., del. local foundries	9.00 to 9.50
Pitts., cupola	10.00 to 11.00
San Fran., del.	13.50 to 14.00
Seattle	4.50 to 6.50
St. Louis, No. 1	8.25 to 8.75
St. L. No. 1 mach.	7.75 to 8.25

HEAVY CAST

Boston, del.	4.50 to 4.75
Bost., mach. cast	7.00 to 7.50
Buffalo, break	7.00 to 7.50
Cleve., break	7.00 to 7.50
Detroit, auto net	9.00 to 9.50
Detroit, break.	6.50 to 7.00
Eastern Pa.	9.50 to 10.00
N. Y. No. 1, deal.	6.00
N. Y. break, deal.	5.50 to 5.75
Pittsburgh	9.50 to 10.00

MALLEABLE

Boston, consum.	9.50 to 10.00
Buffalo	11.50 to 12.00
Chicago, R. R.	11.00 to 11.50
Cinci., agri. del.	8.00 to 8.50
Cinci., R. R. del.	8.75 to 9.25
Cleveland, rail	10.00 to 10.50
Detroit, auto	8.50 to 9.00
St. Louis R. R.	8.50 to 9.00

RAILS FOR ROLLING
5 feet and over

Birmingham	8.50 to 9.50
Boston, deal.	6.00 to 6.50
Buffalo	8.75 to 9.25
Chicago	10.50 to 11.00
Eastern Pa.	10.00 to 11.00
New York, dealer	6.25 to 6.75
St. Louis	10.00 to 10.50

LOCOMOTIVE TIRES

Chicago, cut	9.50 to 10.00
St. L., No. 1	7.50 to 8.00

LOW PHOS. PUNCHINGS

Buffalo	10.50 to 11.50
Chicago	10.50 to 11.00
Eastern Pa.	11.50 to 12.00
Pittsburgh	13.25 to 13.75

Co. has bought a tonnage for its Lorain, O., works.

Cleveland—Various railroad lists offer considerable scrap for bids this week but the market is buoyant, needs being sufficient to absorb these offerings. More Canadian turnings by boat have arrived for a local steelmaker. Prices are strong and a number of advances have been made in adjusting relative levels.

Chicago—Scrap prices generally are higher. Heavy melting steel has been sold at $10, an advance of 50 cents a ton over the recent market. Available supplies at present prices are light and dealers find little material available at less than $9.75. Cast iron borings are in better demand following almost complete lack of market for many months. Some blast furnace scrap also is being purchased for boat shipment eastward.

Detroit—Demand for iron and steel scrap from outside districts has attained the heaviest proportions in history. Supplies are limited to monthly lists of automobile manufacturers, there being only one yard accumulation of note. The result is a boiling market, with prices tending sharply upward. Increases of 25 to 50 cents are noted in borings, busheling, turnings, loose clippings, auto malleable and forge flashings.

Boston — For water shipment to Sparrows Point, Md., a steelworks buyer is paying $6.50, barge, for No. 1 heavy melting steel, a new factor in the current rising scrap market. Heavy melting steel for rail shipment to Pittsburgh area is also higher, dealers having bid $6.25, f.o.b., and $4.50 for No. 2.

New York — Sharp advances in several scrap grades, $1 a ton for No. 1 and No. 2 heavy melting steel, feature heavier buying. The higher prices result from firmer bids on barge loading for shipment to Sparrows Point, Md. This follows a 50-cent rise the previous week.

Philadelphia—Leading grades of scrap have been advanced here, on purchases of 7500 tons by the Alan Wood Steel Co., Conshohocken, Pa., and 3000 tons of unprepared steel scrap by Bethlehem Steel Co., for Bethlehem, Pa. No. 1 heavy melting steel has been advanced to $10, delivered, with indications that tonnage buying would bring a higher figure. Bethlehem Steel Co. for the first time is bringing scrap for Sparrows Point, Md., by barge from Boston and New York.

Buffalo—Local plants have bought considerable boat scrap, including No. 2 heavy melting steel, new bundles and blast furnace scrap. Dealers are holding for $11 for No. 1 steel and $10 for No. 2. The last purchases of blast furnace scrap were at $6.50 to $6.75.

Cincinnati—Activity in iron and steel scrap during June exceeded any month since August, partly due to heavy shipments against spring contracts. Mills buy small lots freely, with dealers seeking supplies. Quotations generally are higher.

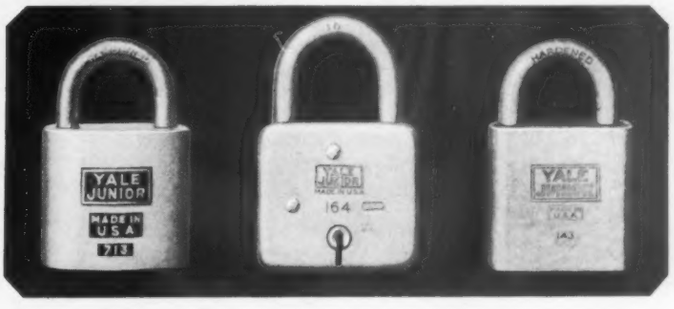
St. Louis—Prices of iron and steel scrap continue strong and dealers experience increasing difficulty in obtaining material for contracts. Recent sales by railroads were reported at about $1 per ton above last previous transactions.

Birmingham, Ala.—Prices on steel and iron scrap are firm with sales active, though in small lots.

Toronto, Ont.—While there has been little definite improvement in iron and steel scrap, dealers note a better undertone. Steel scrap is moving against export demand, but Canadian melters are out of the mar-

UDYLITE-CADMIUM*

Protects and Beautifies these "Yale" Locks . . . *at low cost*



THE "Yale" lock, made by the Yale & Towne Mfg. Co., of Stamford, Conn., has the reputation for being just as fine an article that money can buy. Why are they finished with Udylite-Cadmium? We'll tell you, or better still, one of Yale & Towne Mfg. Co.'s executives will tell you.

"We found that this type of finish was gaining favor with our customers and decided to use Udylite-Cadmium because it's the best rust preventive coating we know of. Besides, it makes a very attractive finish and can be applied easily and economically."

You may not be in the hardware business but it will certainly pay you, as the manufacturer of any metal product, to investigate Udylite-Cadmium. It offers advantages in a combination beyond the scope of any other electroplated metal. For instance, the Udylite-Cadmium coating is the most efficient rust preventive known to science; its permanent silvery-white lustre is attractive enough for finishing purposes alone; the cost is less than, for example, that of buffed nickel. Honestly, what more could be asked of a finish?

*Udylite-Cadmium is a protective coating of pure metallic cadmium electrolytically applied. It is a corrosion resistant, attractive and economical finish

This catalog will tell you the whole story about Udylite-Cadmium. Write for it.

Udylite Process Company
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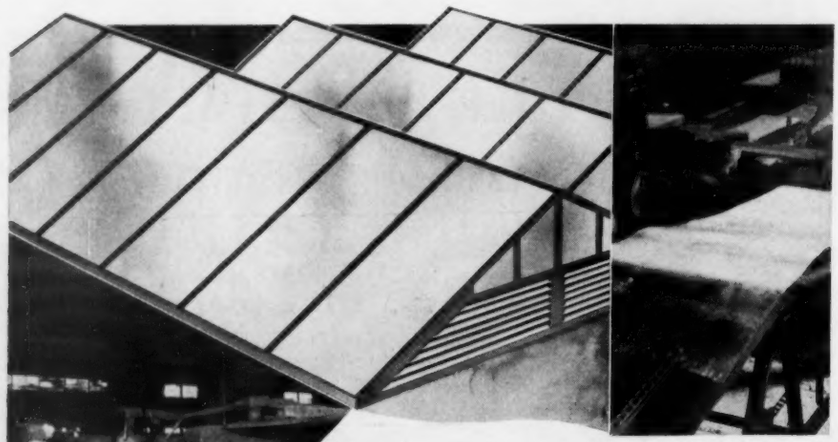
ket. No. 1 machinery cast is moving in small lots.

Financial News of Steel Industry

KEYSTONE STEEL & WIRE CO., Peoria, Ill., on Aug. 1 will pay $5.25 on its 7 per cent preferred stock, representing one-half of the deferred dividend.

□ □ □

Harbison-Walker Refractories Co., Pittsburgh, has resumed dividends on its preferred stock by declaring a regular dividend of $1.50 a share payable July 20 to record July 10. Dividends payable on this stock during the first two quarters of this year were deferred owing to unprofiable business conditions.



GOHI
SHEET METAL
Resists rust, wear, weather, and corrosion

A Pure Iron with the right amount of Copper added, GOHI Sheet Metal is unusually resistant to wear, weather, rust, and corrosion. This is conclusively proven by the fact that it has been used extensively as roofing for nearly twenty-five years.

And because GOHI Sheet Metal is soft, homogeneous, ductile, properly rolled, annealed, and inspected, it is uniform in quality, easy to cut, stamp, bend, seam, draw, form, and weld.

Although its first cost is only slightly higher than steel, its long service makes it far more economical in the end.

GENUINE OPEN HEARTH IRON GOHI TRADE MARK PURE IRON - COPPER ALLOY REG. U.S. PAT. OFF.

The
NEWPORT ROLLING MILL
Company
Newport, Kentucky

Iron Output Best In Two Years

(*Concluded from Page* 16)

Wheeling Steel Corp. In Kentucky: Ashland No. 1, American Rolling Mill Co. In Alabama: Ensley No. 6 and Fairfield No. 5, Tennessee Coal, Iron & Railroad Co.; one City, Sloss-Sheffield Steel & Iron Co. In Illinois: South Works Old Nos. 1 and 2, Illinois Steel Co. In Indiana: Gary No. 10, Illinois Steel Co.; Madeline No. 3, Inland Steel Co. In Michigan: Detroit B, National Steel Corp.

RATE OF OPERATION

(Relation of Production to Capacity)

	1933[1]	1932[2]	1931[3]	1930[4]
Jan.	13.3	22.1	38.4	65.0
Feb.	14.3	23.4	42.5	72.1
March	12.7	22.0	45.4	74.5
April	15.1	20.2	46.5	75.4
May	20.9	17.9	44.7	74.2
June	30.6	14.7	37.9	69.3
July	.....	13.0	32.7	60.3
Aug.	.....	12.0	28.7	57.8
Sept.	.....	14.0	27.0	53.8
Oct.	.....	14.7	26.3	49.6
Nov	.....	14.7	25.5	44.1
Dec.	.....	12.5	22.0	38.1

[1]Based on capacity of 50,313,975 gross tons, Dec. 31, 1932; [2]on capacity of 51,598,175 tons; [3]on capacity of 52,515,875 tons; [4]on capacity of 51,490,680 tons. Capacities by American Iron and Steel institute.

The Everett-Saxton Co., Philadelphia, is dismantling its Earlston furnace at Everett, Pa. This stack, a merchant unit built in 1883 and rebuilt in 1909, had an annual capacity of 90,000 tons. It was built by the late Joseph E. Thropp and operated by him for many years. The furnace has not made iron for several years. With the demolition of this unit, the total of potential furnaces in the United States is reduced from 289 to 288.

Delaware, Lackawanna & Western has placed six oil-electric switching engines of 600 horsepower each with the American Locomotive Co., New York, and three of 325 horsepower with Ingersoll-Rand Co., New York. General Electric Co., Schenectady, N. Y., will supply electrical equipment for each.

A. P. Green Firebrick Co. and Mexico Refractories Co., both of Mexico, Mo., have given a 20 per cent increase in wages, bringing them back to the level of 1929.

Personals

(*Concluded from Page* 19)

sociation of the heads of the principal trade associations.

□ □ □

Richard A. Parker, Denver, mining engineer and graduate of Columbia university in 1878, was recently awarded by Columbia a gold medal for being "the pioneer of Colorado engineers who won his place in the foremost ranks of his profession." Last February Mr. Parker was awarded a medal for "conspicuous Columbia alumni service."

□ □ □

H. C. Pletscher, Detroit, formerly district mill sales manager for the Follansbee Bros. Co., has been made special sales representative at Detroit for the Apollo Steel Co., Apollo, Pa.

□ □ □

E. T. Frohman, vice president, S. Obermayer Co., Pittsburgh, has been elected president of the alumni of Rose Polytechnic institute, Terre Haute, Ind.

□ □ □

William W. Coleman, president of the Bucyrus-Erie Co., South Milwaukee, Wis., has returned after an absence of three months in Europe. After visiting the company's British affiliate, Ruston-Bucyrus Ltd., he spent some time on the Continent.

□ □ □

H. C. Thomas, formerly assistant to the general works manager, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., has been appointed sales manager of Micarta products for the Westinghouse company. Mr. Thomas has been affiliated with Westinghouse, with the exception of a brief period during the war, since 1910.

□ □ □

George W. McKown, Milwaukee representative of the American System of Reinforcing, is now operating independently, the American having closed its Milwaukee office. He will continue to make his headquarters at 953 Empire building, 710 North Plankinton avenue. Before joining the American System, Mr. McKown represented the Corrugated Bar Co. in Milwaukee for a number of years.

□ □ □

J. H. Collier has been elected vice president of Crane Co., Chicago, succeeding Charles A. Wayman, who remains with the company in an advisory capacity. Mr. Collier formerly was general manager of European subsidiaries, and his election as a vice president follows the abolition of the former office.

□ □ □

George B. Durell, a founder and for the past ten years president of the American Fork & Hoe Co., Cleveland, is now chairman of the board.

A. A. Fifield, formerly of St. Catherines, Ont., and recently in charge of the railway appliance division of the company, has been elected president.

George T. Price was elected vice president in charge of sales; Winthrop Withington vice president in charge of manufacturing, R. H. Cowdery vice president, and A. W. Ferguson secretary and treasurer.

□ □ □

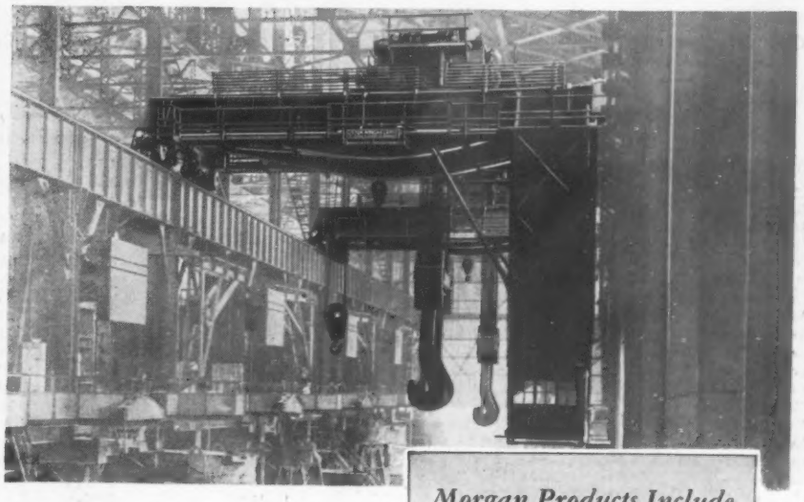
P. M. Ford, formerly with the Carnegie Steel Co. and Corrigan, McKinney Steel Co., Cleveland, has been appointed sales representative for steel bars in the Cleveland office, Youngstown Sheet & Tube Co.

F. H. Webb has been transferred from the sales department, of the Youngstown company at Youngstown, O., to the company's Cleveland office, to sell pipe and conduit.

M. H. Watkins, Cleveland sales department of the Youngstown company, has been transferred to the company's Chicago office, to sell tin plate.

Permutit Co., New York, has moved its general offices from 440 Fourth avenue to the McGraw-Hill building, 330 West Forty-second street.

BUILT BY MORGAN *Engineering* » »



THIRTY YEARS before the automobile became a recognized means of transportation, Morgan was building cranes for steel mills, establishing a tradition for integrity of materials and workmanship that has lasted for more than sixty years. And here are two of four Morgan Cranes in the pouring bay of a great modern steel mill, typical of present-day Morgan Engineering practice. These 175-ton, 8-motor, 54'-0" Span, 4-Girder Type Ladle Cranes are designed with safety first paramount. All Morgan Ladle Cranes are equipped with roller or bronze bearings, worm or spur gear trolley, and hydraulic or mechanical bridge brakes, as preferred.

Morgan Products Include

BLOOMING MILLS
PLATE MILLS
CONTINUOUS MILLS
STRUCTURAL MILLS
ELECTRIC TRAVELING CRANES
CHARGING MACHINES
INGOT STRIPPING MACHINES
LADLE CRANES
SOAKING PIT CRANES
STEAM HAMMERS
STEAM HYDRAULIC FORGING PRESSES
SPECIAL MACHINERY FOR STEEL MILLS

•

DESIGNERS
MANUFACTURERS
CONTRACTORS

THE MORGAN ENGINEERING COMPANY

New York, 11 W. 42d St. ALLIANCE, OHIO *Pittsburgh, 1420 Oliver Bldg.*

Warehouse

Buying Holds Up; Prices Being Adjusted

Cleveland—Effective July 10, warehouses here have advanced galvanized sheets from 3.50c to 3.85c, the same increase announced recently by mills. Other prices are unchanged. Sales in June were slightly above the May volume; they continue fairly active.

Pittsburgh—An advance in hoops and bands out of warehouse is expected but bars, plates and shapes give indication of being unchanged. Hoops now are 3.60c and bands 2.95c. Both cement coated and common nails are up 25 cents to $2.40 a keg, warehouse. Small spikes have been advanced 25 cents to 2.65c, Pittsburgh warehouse, and large rivets are stronger at $3 to $3.25 per 100 pounds.

Chicago — Common and cement coated wire nails have been advanced 15 cents a keg to $2.45. Prices on other warehouse products are unchanged. Business has continued active but suffered moderately from the holiday interruption.

Baltimore—Prices have been advanced $2 a ton on several items out of warehouse here. Bands are now 2.75c, steel bars, plates ¼-inch and heavier, and shapes, 2.45c, and No. 10 blue annealed sheets, 2.70c. Business is being maintained at about the June rate, which was the best so far this year.

Philadelphia—Jobbers report continuation of the relatively good buying of June. While prices generally are unchanged, prospects are for an advance, particularly in sheets.

Boston—Jobbers report some mills have not committed themselves beyond July and uncertainty prevails. Meanwhile quotations are steadier and firm.

Cincinnati—Steel jobbers continue old prices although changes may follow mill increases. Buying this month, with allowance for a holiday, has been at the June rate.

St. Louis—Business of iron and steel warehouse is holding the June pace, the best this year, well above the same month a year ago.

Detroit—While warehouse business in iron and steel continues brisk, the rate of gain is somewhat slower than during the past three or four months, indicating that July will be about on a parity with June. August business may reflect a seasonal slowness, accentuated partly by automotive plant vacations.

New York—Sheet prices have been advanced by the local warehouse trade. Blue annealed are now 3.00c; black 3.65c, and galvanized 4.00c. Other prices are steadier.

Warehouse Quotations at Leading Centers, in Cents Per Pound

(All Philadelphia prices subject to quantity differentials except reinforcing and Swedish bars)

STEEL BARS	☐
Baltimore*	2.45c
Boston††	2.50c
Buffalo	2.95c
Chattanooga	3.00c
Chicago	2.75c
Cincinnati	3.00c
Cleveland	2.75c
Detroit	2.85c
Houston	2.40c
Los Ang.	3.30c
New Orleans	2.50c
New York‡(d)	3.10c
Philadelphia	2.45c
Pittsburgh	2.50c-2.60c
Portland	3.00c
San Fran.	3.15c
Seattle	3.00c
St. Louis	3.00c
St. Paul	3.00c
Tulsa	3.25c

IRON BARS	☐
Baltimore	2.35c
Boston††	2.70c
Chattanooga	3.00c
Chicago	2.75c
Cincinnati	3.00c
Detroit	2.85c
New York‡(d)	3.10c
Philadelphia	2.45c
St. Louis	3.00c
Tulsa	3.25c

REINFORC. BARS	☐
Baltimore	2.35c-3.00c
Boston	3.10c-3.25c
Buffalo	2.95c
Chattanooga	3.00c
Cincinnati	3.00c
Cleveland	2.00c-2.45c
Detroit	2.85c
Houston	3.00c
Los Ang. cl.	2.10c
New Orleans	2.75c
Los Ang., lcl	2.40c
New York	2.65c-3.10c
Phila.	2.62½c
Pittsburgh	2.50c-2.60c
San Fran. cl.	2.00c
San Fran. lcl	2.40c
Seattle	3.00c
St. Louis	3.15c
Tulsa	3.25c
Young.	2.30c-2.60c

SHAPES	☐
Baltimore*	2.45c
Boston††	2.60c
Buffalo	3.20c
Chattanooga	3.20c
Chicago	3.00c
Cincinnati	3.25c
Cleveland	2.95c
Detroit	3.10c
Houston	2.65c
Los Ang.	3.20c
New Orleans	3.50c
New York(d)	3.10c
Philadelphia	2.45c
Pittsburgh	2.85c
Portland	3.35c
San Fran.	3.15c
Seattle	3.00c
St. Louis	3.25c
St. Paul	3.25c
Tulsa	3.50c

PLATES	☐
Baltimore*	2.45c
Boston††	2.60c
Buffalo	3.20c
Chattanooga	3.20c
Chicago	3.00c
Cincinnati	3.25c
Cleveland, ¼-in. and thicker	2.95c
Cleve., 3/16-in.	3.20c
Detroit	3.10c
Det., 3/16-in.	3.10c
Houston	3.00c
Los Angeles	3.30c
New Orleans	3.50c
New York(d)	3.30c
Philadelphia	2.45c
Phila. floor	5.10c
Pittsburgh	2.85c
Portland	3.35c
San Fran.	3.15c
Seattle	3.00c
St. Louis	3.25c
St. Paul	3.25c
Tulsa	3.50c

NO. 10 BLUE	☐
Baltimore*	2.70c
Boston††	2.35c
Buffalo	3.10c
Chattanooga	3.44c
Chicago	2.75c
Cincinnati	3.05c
Cleveland	2.75c
Det., 8-10 ga.	2.90c
Houston	3.35c
Los Ang.	3.80c
New Orleans	3.25c
New York	3.00c
Portland	4.00c
Pitts.**	2.60c
San Fran.	3.75c
Seattle	3.50c
St. Louis	3.00c-3.15c
St. Paul	3.45c
Tulsa	3.70c

NO. 24 BLACK	☐
Balt.*†	3.25c
Boston††	3.45c
Buffalo	3.25c
Chattanooga	3.50c
Chicago	3.45c
Cincinnati	3.60c
Cleveland	3.25c
Detroit	3.30c
Los Ang.	4.20c
New York	3.65c
Pitts.**	3.35c
Portland	4.50c
San Fran.	3.70c
Seattle	4.25c
St. Louis	3.60c
St. Paul	3.695c
Tulsa	4.75c

NO. 24 GAL. SHEETS	☐
Balt.*†	3.75c
Buffalo	3.75c
Boston††	4.00c
Chattanooga	3.95c
Chicago	3.75c-3.85c
Cincinnati	4.00c
Cleveland	3.85c
Detroit	3.50c
Houston	3.57c
Los Ang.	4.50c
New Orleans	3.95c
New York	4.00c
Pitts.**	3.60c-3.85c
Portland	5.00c
San Fran.	4.30c
Seattle	4.75c
St. Louis	3.75c
St. Paul	4.19c
Tulsa	5.10c

†BANDS	☐
Baltimore	2.75c
Boston††	3.00c
Buffalo	3.30c
Chattanooga	3.20c
Chicago	2.95c
Cincinnati	3.20c
Cleveland	3.00c
Det. 3/16-in. & lighter	3.15c
Houston	2.85c
Los Ang.	3.80c
New Orleans	2.75c
New York(d)	3.30c
Philadelphia	2.75c
Pittsburgh	2.95c
Portland	3.85c
San Fran.	3.15c
Seattle	3.50c
St. Paul	3.20c
Tulsa	3.45c
St. Louis	3.20c

†HOOPS	☐
Baltimore	2.65c
Boston	4.90c
Buffalo	3.55c
Chicago	3.50c
Cincinnati	3.75c
Det. No. 14 & lighter	3.65c
New York	3.30c
Philadelphia	3.00c
Pittsburgh	3.60c
Seattle	5.00c
St. Paul	3.75c

COLD FIN. STEEL	☐
Baltimore (c)	3.33c
Boston (g)	3.60c
Buffalo	3.00c
Chattanooga*	3.65c
Chicago	3.00c
Cincinnati	3.32c
Cleveland	2.95c
Detroit	3.15c
Los Ang.	5.50c
New Orleans	4.25c
Philadelphia	3.35c
Pittsburgh	2.95c
Portland (f)	4.50c
San Fran.(d)	5.50c
Seattle (f)	4.50c
St. Paul	3.20c
St. Louis	3.36c
Tulsa	4.65c

COLD ROLL. STRIP	☐
Boston 0.100 in., 500 lb. lots	5.20c
Buffalo	5.25c
Chicago (b)	5.65c
Cincinnati	5.80c
Cleve. (b)	5.55c
Detroit	5.40c
Phila. (c)	4.55c
New York	4.55c

(a) Rounds, hex. only.
(b) Net base straightening, cutting, boxing 1 ton or more.
(c) Plus mill, size and quantity extras.
(d) Minus quant. diff.
(e) New mill classif.
(f) Rounds only.
(g) Bessemer analysis extras included.

‡Domestic bars.
*Plus quan. extras.
**Under 25 bundles.
*†50 or more bundles.
†New extras apply.
††Base 40,000 lbs., extras on less.

Prices at Detroit, Cleveland, New York, Chicago, Pittsburgh, Cincinnati, Chattanooga and St. Louis on heavier lines are subject to new quantity differentials: 399 pounds and less, up 50c; 400 to 999 pounds, base; 1000 to 4999 pounds, 20c off; 5000 to 9999 pounds, 40c off; 10,000 to 39,999 pounds, 60c off; 40,000 pounds and over, 75c off.

Equipment

Active Demand for Mill Rolls Noted—Tool Prices Up

Chicago—Demand continues more active among miscellaneous supplies and small tools than in heavier machinery. Expanding steel plant operations have resulted in increased orders for ingot molds, rolls and equipment repair parts. Stocks of molds and rolls prior to the recent sharp upturn in steel production were light and in one instance a plant's schedule was endangered by a shortage of molds. Machine tools gradually are becoming more active, with inquiry showing more improvement than actual sales. Railroads continue to make only scattered purchases but occasionally are building up stocks of various types of small equipment. A large number of woodworking tools will be disposed of at public auction of land, plant and machinery of the Metal Stampings Corp., Streator, Ill., on July 11. Harnischfeger Corp., Milwaukee, has received an order from the Freeport Sulphur Co. of Louisiana for a gantry crane with 150-foot span.

Cleveland—Sales continue in good volume with every indication of maintaining the pace throughout the summer. Prices on many lines of standard tools have been marked up, increases ranging from 5 to 10 per cent. Further upward revisions are expected. A turret lathe builder here has booked some fair business in the East. Most of the equipment included in the recent opening at Wright Field, Dayton, O., has been placed.

Pittsburgh—Wheeling Steel Corp., has announced that four new annealing furnaces will be added at its Steubenville, O., plant. Lewis Foundry & Machine Co., Groveton, Pa., reports booking several new orders for heavy mill equipment. Among shipments was a 3-high mill for the Sparrow Point, Md., plant of Bethlehem Steel Co. The heaviest demand for any steel mill equipment is still in rolls but closing on some important business in several stands is expected daily.

New York—Machinery and equipment buying, although light, has gained in spots and dealers and builders are figuring more equipment. Volume is largely for special tools, purchase frequently being influenced by demonstrated engineering and production advantages. Lathes and other tools have been purchased by shops at Reading and Pottstown, Pa. Most of the tools in the substantial list recently opened for the Picatinney, N. J., arsenal have now been placed.

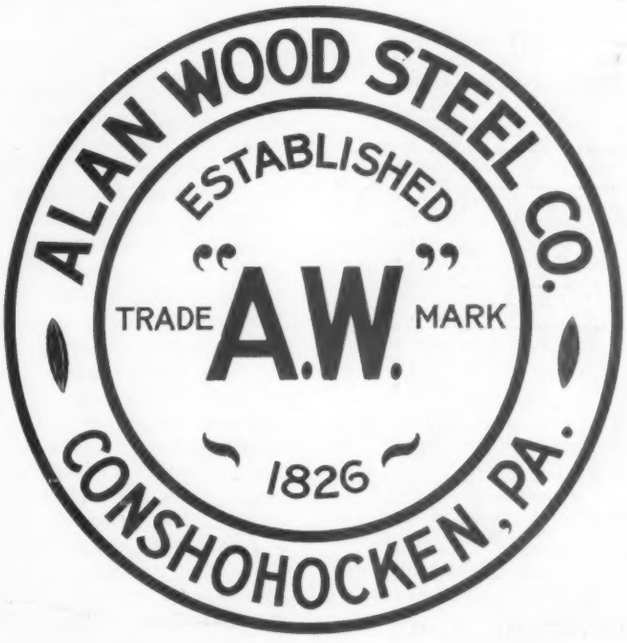
Boston — Machine building shops continue to book slightly better volume, although sales with the exception of textile plant purchases, are generally for one or two special tools at a time. Last month was the best in more than two years with some New England builders. General industrial operations are holding well, notably with ball bearing producers.

The bureau of standards has announced that the revised simplified practice recommendation covering wrought iron and wrought steel pipe and fittings now is in print. This program was instrumental in reducing the number of stock sizes of pipe from 62 to 48.

Carbon and Alloy Steels
Blue Annealed Sheets,
Sheared Plates: also Billets.

Rolled Steel Floor Plates
Diamond, Diamondette and Ribbed Patterns

Swede Pig Iron
Rainey-Wood Coke



107 Years Iron and Steel Making Experience

ALAN WOOD STEEL CO.
CONSHOHOCKEN, PA.

Branch Offices:

Philadelphia — New York — Los Angeles
Seattle — San Francisco — Houston

Nonferrous Mill Products

Base price cents per pound f.o.b. mill except otherwise specified. Copper and brass product prices based on 9.00c, Conn., for copper

Sheets	
Yellow brass (high)	14.00
Copper, hot rolled	15.62½
Lead sheets, cut to jobbers	8.00
Zinc sheets (100-lb. base)	9.00
Tubes and Pipes	
Seamless yellow brass (high)	15.87½
Seamless copper	16.12½
Rods	
Yellow brass (high, full turning)	11.75
Naval brass	11.87½
Anodes	
Copper, untrimmed	14.00
Wire	
Yellow brass (high)	14.25

Old Metals

Dealers' buying prices, cents lb

No. 1 Composition Red Brass	
New York	4.75 to 5.00
Chicago	4.25 to 4.50
Cleveland	5.25 to 5.75
St. Louis	4.00 to 4.25
Heavy Yellow Brass	
New York	3.50 to 3.75
Heavy Copper and Wire	
New York	6.37½ to 6.50
Chicago, No. 1	5.50 to 5.75
Cleveland	5.50 to 6.00
St. Louis	4.75 to 5.00
Composition Brass Borings	
New York	4.50 to 4.75
Yellow Brass Tubing	
Cleveland	3.25 to 3.75
Light Copper	
New York	5.00 to 5.25
Chicago	4.25 to 4.50
Cleveland	5.00 to 5.50
St. Louis	4.25 to 4.50
Light Brass	
Chicago	2.75 to 3.00
Cleveland	2.75 to 3.25
St. Louis	2.50 to 3.00
Lead	
New York	3.37½ to 3.50
Cleveland	3.00 to 3.25
Chicago	2.50 to 2.75
St. Louis	2.75 to 3.00
Zinc	
New York	2.25 to 2.37½
Cleveland	2.00 to 2.25
Chicago	2.00 to 2.25
St. Louis	2.00 to 2.25
Aluminum	
Clippings, new, soft, Cleve.	13.00 to 14.50
Clippings, hard, Cleveland	8.00 to 10.00
Borings, Cleveland	5.00 to 6.00
Mixed cast, Cleveland	7.00 to 8.00
Mixed cast, St. Louis	6.50 to 7.00

Secondary Metals

Brass ingot, 85-5-5-5	8.50
Remelt aluminum No. 12	12.25 to 13.00

Metals

Further Sharp Rise Develops In Copper—Quotations on Tin, Lead and Zinc Also Go Higher

New York—Further inflationary tendency developed in the nonferrous metals during the past week with quotations on all leading classifications moving into higher ground. The metals were carried higher by the upward push in all commodities resulting from a further drop in the value of the dollar in the world money market. The advancing prices were accompanied by more active demand, due both to increased consumption and the rush to cover against a further rise.

Copper—Electrolytic metal advanced rapidly during the week after holding through June at 8.00c, Connecticut. At the end of the week the metal had reached 9.00c, representing an advance of 80 per cent over the level of only a few months ago. Corresponding increases were shown in other copper grades. Buying was in good volume for delivery through October. Related products also advanced, including 1-cent on copper and brass products, a similar amount on brass ingot and 1¼ cents on copper wire. Scrap prices moved higher but trading was restricted due to uncertainty of the price situation. A committee of copper producers continued to hold meetings with regard to formulation of a code for the industry but without apparent results. It is reported that a co-ordinator may be named to adjust difficulties.

Zinc—Quotations shot up rapidly with prime western reaching 4.75c, East St. Louis, Friday. Buying was in good volume. A strong ore market and further favorable statistical developments supported the metal. Stocks dropped more than 12,000 tons in June, which followed a cut of over 5000 tons in May.

Lead—Sellers advanced quotations $4 a ton during the week to the bases of 4.40c, New York, and 4.25c, East St. Louis. The metal continued in a strong postion. Sales for July delivery aggregate 37,000 tons compared with June business of 27,500 tons.

Tin—Quotations soared on further advance in sterling exchange rates coupled with higher prices for the metal in London. Sterling went well above $4.70 Friday. Surplus stocks fell sharply in June but producers placed into effect July 1 a plan for further reduction of output.

Antimony—The market was firm but unchanged at 6.50c for spot.

Coke By-Products Firm

New York—Contract shipments of naphthalene have been practically completed and current business is limited largely to light spot demand. Distillates are active at firm prices. Phenol and sulphate of ammonia are unchanged.

Coke By-Products

	Spot
Per Gallon Producers' Plants, Tank Lots	
Pure benzol	$0.22
90 per cent benzol	0.22
Toluol	0.30
Solvent naphtha	0.26
Commercial xylol	0.26
Per Pound at Producers' Plants in 250-Pound Drums	
Phenol	0.153 to 0.173
Per Pound at Producers' Plants	
Naphthalene flakes	4.75 to 5.75
Naphthalene balls	4.75 to 5.75
Per 100 Pounds Atlantic Seaboard	
Sulphate of ammonia	$1.15

Quicksilver Firmer

New York—Quicksilver prices are firmer, small lots $62 to $63 a virgin flask of 76 pounds, and round lots $61 to $62.

Nonferrous Metal Prices of the Week, Cents a Pound

Spot unless otherwise specified

	Copper			Straits Tin			Lead			Aluminum		
	Electro., del. Conn.	Lake, del. Midwest	Casting, refinery	New York Spot	New York Futures	Lead N. Y.	East St. L.	Zinc St. L.	98-99% Spot, N. Y.	Antimony	Ingot Nickel
July 1	8.00	8.12½	7.75	45.25	45.40	4.20	4.05	4.50	*22.90	6.50	35.00
July 3	8.25	8.37½	8.00	46.25	46.40	4.20	4.05	4.50	*22.90	6.50	35.00
July 4—Holiday											
July 5	8.50	8.62½	8.25	46.50	46.65	4.30	4.15	4.60	*22.90	6.50	35.00
July 6	8.50	8.62½	8.25	46.37½	46.50	4.30	4.15	4.60	*22.90	6.50	35.00
July 7	9.00	9.12½	8.75	47.75	48.05	4.40	4.25	4.75	*22.90	6.50	35.00

*Nominal quotation. Market range 19.90c to 22.90c.

Pacific Coast

First Half Sales Exceed Same Period Last Year—Tonnage for Bridge Gave Gain—Bids Refused on Distant Coverage—Price Uncertainty Delays Some Orders—Scrap Dull

San Francisco—(*By Air Mail*)—Awards of structural shapes and plates during the first half of this year greatly exceeded the tonnage booked for first half of 1932, while reinforcing bar tonnages and cast iron pipe lettings fell below the total of the previous year. Shape awards this year included 145,000 tons for the San Francisco-Oakland bridge. Following are tonnages:

	First Half 1933	1932
Structural shapes	167,276	50,871
Plates	31,382	8,272
Reinforcing bars	29,810	30,047
Cast iron pipe	17,421	23,867

Evidence of impending price advances is noticed in the fact steel mills refused to cover general contractors on large projects on which part of the material would not be used until 1934 and 1935. Metropolitan water district, Los Angeles, called for bids on over 7500 tons of plates and shapes for tunnel lining for delivery, one-third each in 1933-34-35. This call was canceled and only 2500 tons for this year now are up for bids. Sheet prices have been advanced $3 a ton, and plates and shapes are expected to be advanced shortly.

Bids will be opened July 14 for 1916 tons of plates for tunnel linings for the metropolitan water district, Los Angeles. Plates are unchanged at 1.75c, c.i.f. McClintic-Marshall Corp. secured 525 tons for the Key System Ltd. pier in Oakland, Calif., and Guilfoy Cornice Works, San Francisco, booked 140 tons of galvanized sheets for the same project. The former company also took 112 tons for St. Albert college, Oakland, Calif. Over 1200 tons are involved in tunnel lining for the metropolitan water district, bids July 14. Pending business now exceeds 51,000 tons.

June Sales Show Gain

Seattle—June gave increased volume over the previous month and June, 1932, the firmness of the iron and steel situation having stimulated restocking.

The trade is anxiously awaiting announcement of mill prices for third quarter, expected to be released next week. The only advance thus far has been that of $3 per ton for galvanized sheets, applying only during the current month. In the meantime jobbing houses have made no changes in prices. The market is firm.

Interest in scrap is less pronounced, Oriental buyers being apathetic. Heavy melting steel is $6.25 gross, f.a.s., and No. 1 cast iron $5.25 gross, f.a.s. Automobile scrap is not moving, as exporters want heavier grades.

Steel in Europe

British Steel Mills Merge; Markets Show Improvement

London—(*By Cable*)—Merger of principal steelmaking companies on the northeast coast of England has been announced. It includes three large concerns, Dorman Long & Co., South Durham Steel & Iron Co. and Cargo Fleet Iron Co. These companies in 1929 produced 1,354,000 tons of rolled steel of the total of 7,600,000 tons for England. The merger is designed to eliminate competition and do away with obsolete or redundant plant, concentrating in more efficient plants, with saving in costs and better selling organization.

Markets for steel and iron are steady with home demand expanding gradually, overseas inquiries growing and output increasing. Middlesbrough furnaces have advanced their prices to Scotland. The Scottish market is moderately encouraging. Trade in the Birmingham district is quiet but hopeful, with merchant bars showing strength. Metropolitan-Vickers Electrical Co. Ltd., Manchester, has booked a large electrical order from a South American railroad.

The Continent is increasing its tin plate purchases and light foundries are more active. Export trade from Continental countries is quiet but French and German domestic trade is improving.

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, July 6

Export Prices f.o.b. Ship at Port of Dispatch—By Cable (or Radio)

	British gross tons U. K. ports	£ s d	Continental Channel or North Sea ports, metric tons Gold parity, $4.8665	£ s d
PIG IRON				
Foundry, 2.50-3.00 Silicon	$13.19	2 18 6	$8.27	1 14 0
Basic bessemer	12.18	2 14 0*	7.30	1 10 0
Hematite, Phos. .03-.05	13.30	2 19 0	.....	.....
SEMIFINISHED STEEL				
Billets	$22.55	5 0 0	$11.44	2 7 0
Wire rods, No. 5 gage	33.83	7 10 0	21.90	4 10 0
FINISHED STEEL				
Standard rails	$34.95	7 15 0	$26.77	5 10 0
Merchant bars	1.33c	6 12 6	.66c	3 0 0
Structural shapes	1.48c	7 7 6	.61c	2 15 0
Plates, †¼ in. or 5 mm	1.66c	8 5 0	.86c	3 18 6
Sheets, black, 24 gage or 0.5 mm.	1.81c	9 0 0	1.29c	5 17 6
Sheets, gal., 24 gage, corr.	2.21c	11 0 0	1.60c	7 5 0
Bands and strips	1.56c	7 15 0	.80c	3 12 6
Plain wire, base	1.76c	8 15 0	1.18c	5 7 6
Galvanized wire, base	2.11c	10 10 0	1.38c to 1.40c	6 5 6 to 6 7 6
Wire nails, base	2.41c	12 0 0	1.27c	5 15 0
Tin plate, box 108 lbs.	$ 3.89	0 17 3	.....	.....

British ferromanganese $68 delivered Atlantic seaboard, duty-paid. German ferromanganese £9 0s 0d ($43.74) f.o.b.

Domestic Prices at Works or Furnace—Last Reported

		£ s d	French Francs		Belgian Francs		Reich Marks	
Fdy. pig iron, Si. 2.5	$14.09	3 2 6*a	$10.64	200	$11.34	300	$20.25	63
Basic bessemer pig iron	13.30	2 19 0*	10.11	190	11.34	300	22.34	69.50
Furnace coke	2.99	0 13 3	6.38	120	4.16	110	6.19	19.25
Billets	22.55	5 0 0	21.55	405	16.63	440	31.02	96.50
Standard rails	1.66c	8 5 0	1.67c	697	1.87c	1,100b	1.93	132
Merchant bars	1.36c	6 15 0	1.34c	560	.91c	535	1.61c	110
Structural shapes	1.76c	8 15 0	1.32c	550	.91c	535	1.57c	107.50
Plates, †¼-in. or 5 mm.	1.71c	8 10 0	1.63c	680	1.15c	675	1.85c	127
Sheets, black	1.96c	9 15 0§	2.04c	850‡	1.28c	750‡	2.10c	144‡
Sheets, galv., corr., 24 ga. or 0.5 mm.	2.41c	12 0 0	3.48c	1,450	2.47c	1,450	5.40c	370
Plain wire	1.76c	8 15 0	2.71c	1,130	2.21c	1,300	2.58c	177
Bands and strips	1.91c	9 10 0	1.49c	620	1.15c	675	1.85c	127

*Basic. †British ship-plates. Continental, bridge plates. §24 ga. ‡1 to 3 mm. basic price. British quotations are for basic open-hearth steel. Continental usually for basic-bessemer steel.
a del. Middlesbrough. b Since January

Here and There in Industry

GEORGE H. SMITH STEEL CASTING CO., Milwaukee, and its Trackson Co. division, manufacturing tractor equipment, dump wagons and pipelaying machinery have been made separate entities. The Smith company has been reorganized with Mrs. Emma P. Smith, widow of George H. Smith, its founder, as president, J. B. Marshall vice president and sales manager, W. J. Donnelly secretary and general manager, and P. W. Kaufman treasurer. Walter H. Steimke, vice president of the Smith company, becomes president of the Trackson Co., also continuing as general manager.

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Boyle Mfg. Co., Long Beach, Calif., manufacturer of sheet metal products, has increased its working force 25 per cent.

□ □ □

Coosa Pipe & Foundry Co., Gadsden, Ala., resumed operations June 26 after six months of idleness, with over 200 men recalled.

□ □ □

Erie Foundry Co., Erie, Pa., has shipped a steam drop hammer to O. M. Brescia for export to Italy and a steam drop hammer to the Midwest Forge Co., Cleveland.

□ □ □

Fairbanks, Morse & Co., Beloit, Wis., has recalled 300 employes at its main works and has made a 50 per cent increase in payroll since the middle of May. Increase in diesel engine and electrical and hydraulic equipment has been general in all classes of users.

□ □ □

Fairfield Engineering Co., Marion, O., has received sufficient orders in recent weeks to keep its force of 45 employes busy on a five-day schedule for several months.

□ □ □

Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., has announced an increase of 5 per cent in salaries and wages of all officers and employes of the company and all its subsidiaries.

□ □ □

Cutler-Hammer Inc., Milwaukee, has filled a rush order for a 65-inch circular lifting magnet for the Timken Rolling Bearing Co., making delivery to the latter's plant at Canton, O., by motor truck.

□ □ □

Ferro Enamel Corp., Cleveland, announces that June shipments of its product were the largest in its history. A bonus of 10 per cent of salaries and wages for the first six months was paid July 1.

□ □ □

Ashmore, Benson, Pease & Co. Ltd., London, Eng., has sold, under its contract with the William M. Bailey Co., Pittsburgh, three 120-inch thermal expansion goggle valves for installation in India.

□ □ □

Consolidated Aircraft Corp., Buffalo, has leased a site at Lindberg field, San Diego, Calif., and will move its airplane manufacturing plant there from Buffalo. Maj. R. H. Fleet is president of the airplane company.

□ □ □

George J. Meyer Mfg. Co., Milwaukee, manufacturer of bottling equipment for dairies and breweries, has the largest force at work in its history. It has added 60 men in the last month and has 778 on its payroll.

Windows of Washington

(*Continued from Page* 14)

ton, perhaps a central reporting system.

Restoration of 1926 price levels has been a shadowy objective of the President as a means of relieving the debtor class—another facet of the broad scheme of socialization. But for iron and steel a recovery to 1926 prices would imply almost a 50 per cent advance in some commodities.

In July, 1926, No. 2 foundry and malleable pig iron averaged $21 at Chicago; today they are $16. Bessemer iron delivered at Pittsburgh then was $20.46; now it is $17.26. Further comparisons for July, 1926, and current quotations, respectively, are: Southern No. 2 iron, Birmingham, $21 and $12; wire rods at Pittsburgh, $45 and $35; open-hearth billets at Pittsburgh, $35 and $26; heavy melting steel scrap at Pittsburgh, $16.70 and $12; steel bars at Pittsburgh, 2.00c and 1.60c; wire nails at Pittsburgh, 2.65c and 2.10c; No. 24 galvanized sheets at Pittsburgh, 4.30c and 2.85c.

Current prices quoted above give effect to recent advances.

WHEN the President named Miss Perkins secretary of labor, William Green, president of the American Federation of Labor, vowed that he never would become reconciled to the appointment. With greater tact and accuracy Miss Perkins retorted that he would.

Although the walking delegate type of labor leader is an anathema to Miss Perkins, she has learned that despite some deficiencies in being socially minded the Federation represents the labor movement and is a nucleus around which to rally.

Likewise, Miss Perkins has proved of enormous assistance to the labor movement even if she has lacked something of the practical and her viewpoint is chiefly that of the small trades of New York. So the Federation has accepted appointments from her and is co-operating.

Ultimately, it now appears it will be industry that will never become reconciled to Miss Perkins, for her sponsorship of what would be termed radical ideas has been pronounced and aggressive.

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plans, adopted as a result of the recovery act, as "war bridegrooms," she has declared they will be rejected, and it is her attitude that the labor advisers reflected during the textile hearing.

Great industrialists, she believes, must become "social in their intent." She is for unemployment insurance because "it sharpens the wits of employers on how to avoid the expense."

She visualizes making her department a liaison between the national government and the states, the latter to take the voluntary action of industry under the recovery act and adopt it for social legislation.

A great believer in organization as a remedy for social ills, Miss Perkins' creed may be summarized: "If we see that the wage which goes to the investor is less because the wage which goes to the worker has got to be greater I think you will hear all over the country aye from people who have come to be glad to make the sacrifice in order that we may achieve unity of the American people."

Never before has a secretary of labor been a really influential member of the cabinet; no secretary is closer to the President today than Miss Perkins. But from the standpoint of practical politics she has caused the administration many bad moments.

Southern senators will not soon forget her insinuation that southern children are largely shoeless. Also, her frank statement that since the South already is safely Democratic there is no need for favoring it in making appointments.

It is easier to see the President than Miss Perkins, and even influential senators have run afoul of the rule that all appointments with her must be made at least one day in advance.

EARLY this week action to formally launch the $3,300,000,000 public works campaign is expected. This will take the form of the announcements of approved projects, chiefly those which can be put under way promptly, and the selection of deputy administrators. It is possible that separate administrators will be named for the larger states but regional ones for groups of smaller ones.

The same tendency to favor organized labor that has been manifest in the Johnson organization is also apparent in the public works section. The labor advisory committee to the administrator of public works consists of Isador Lubin, chairman; Michael J. McDonough, building and trades department, American Federation of Labor; William Bowen, bricklayers' union; Harry Broach, electrical workers union; George Orris, United Brotherhood of Carpenters and Joiners; and John Coefield, associated with the plumbers' union.

At least 100,000 men will be at work within six weeks on road construction sites, with September probably the peak and little delay this winter on account of weather, it is claimed. Indirect but assured wages totaling more than $200,000,000, over and above payrolls to road builders actually on construction sites, are promised by the public works administration, this wage bill to accrue to cement, steel and other supply industries.

MYRON C. TAYLOR, chairman of the United States Steel Corp., has been invited by Secretary of Commerce Roper to represent steel on his business advisory and planning council for the department of commerce. . . . James A. Farrell, former president of the Steel corporation, has been placed on the department's subcommittee on foreign service. . . . The absence of criticism of the Reconstruction Finance Corp.'s $25,000,000 loan for exporting cotton to Russia may expedite financial assistance for Russian trade in other commodities, including machine tools. . . . The economy axe of Secretary Roper has fallen upon four of the eight members of the iron and steel commodity division of the department of commerce, Luther Becker remaining as chief. . . . Malcolm Muir, of the McGraw-Hill Publishing Co., New York, has been appointed a deputy administrator by General Johnson. . . . The senate banking and currency committee has been asked to remain in session until it can probe the charge that Wall Street caused the national banking holiday last March in order to squeeze Henry Ford.

Construction and Enterprise

New England

PROVIDENCE, R. I.—Stewart Range & Gas Furnace Co. Inc. has been incorporated with 100 shares no par value to manufacture gas ranges and stoves, by Walter A. Sloat, Providence, R. I., and associates.

New York

SYRACUSE, N. Y.—Laron Inc. has been incorporated with $10,000 capital to manufacture metal products, by Herman R. Lipstein, 610 University avenue, Syracuse, N. Y., Richard Aronson, 431 East Fayette avenue, Syracuse, and associates.

NEW YORK—D. & R. Structural Steel & Ornamental Works Inc. has been incorporated with 100 shares no par value to manufacture steel and iron products, by Isidore Romm, 630 Manida street, Bronx, New York, and associates.

NEW YORK—Mildon Engineering Co. Inc. has been incorporated with $110,000 capital to manufacture furnaces and boilers, by G. Eleff, 1505 Bryant avenue, New York, and associates.

NEW YORK—A. P. William Bronze & Iron Co. Inc. has been incorporated with $40,000 capital to conduct a metal works, by Mordecai Kenowitz, 342 Madison avenue, New York.

NEW YORK—Stainless Metals Inc. has been incorporated with $50,000 capital to manufacture metal products, by Martin H. Sommer, 60 East Forty-

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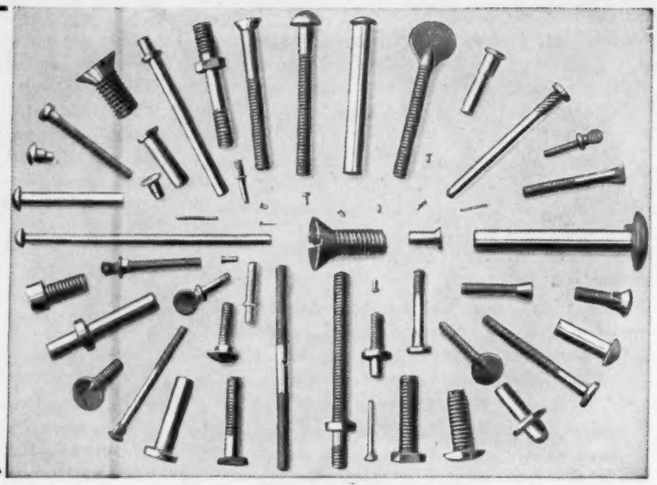

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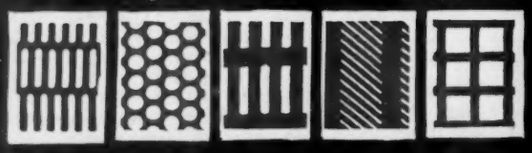

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Pennsylvania

PITTSBURGH—Bell Telephone Co. of Pennsylvania has applied to federal engineers at Pittsburgh for permission to build a telephone wire crossing over the Monongahela river at Ronco, Pa.

Ohio

CLEVELAND—Lake Shore Machine Co. has been incorporated with 250 shares no par value to manufacture machinery, by C. A. Benner, 622 Leader building, Cleveland.

COLUMBUS, O.—Milburn Machinery Co., 141 North Front street, has bought a warehouse and office building at 1057 West Goodale street which will be remodeled for its occupancy. The company, headed by Charles Milburn, president, sells road-making machinery and industrial machinery, as well as engaging in the construction of gravel preparing plants.

Illinois

CHICAGO—Cole's Hot Blast Mfg. Co., 3108 West Forty-first street, has been organized with $100,000 capital to manufacture hot-blast furnaces, equipment and parts.

CHICAGO—Paper Machinery Co., 555 West Monroe street, has been incorporated with 100 shares no par value to manufacture machinery, by Fein & Stone, 77 West Washington street.

CHICAGO—Adams Machinery Co., 105 North Peoria street, has been incorporated with $10,000 capital to carry on a business in machinery, by Fein & Stone, 77 West Washington street, correspondents.

EVANSTON—Mercer Oil Burner Co., 2778 West Railroad avenue, Evanston, has been incorporated with $1000 capital to manufacture heating devices, by Heth, Lister & Collins, 1 North LaSalle street, Chicago.

PEORIA, ILL.—Marquette Brewing Co. plans two buildings, 5 and 6-story, for a brewery of 125,000-barrel capacity, including refrigerating and bottling equipment, at Washington and South streets, to cost about $800,000.

SPRINGFIELD, ILL. — Automotive Engineering & Precision Inc., 602½ East Capitol avenue, has been incorporated with $15,000 capital to manufacture tools and machinery, by W. B. Robinson and associates.

STREATOR, ILL.—Machinery, equipment, motors and other assets of the Metal Stampings Corp. will be sold at bankrupt auction July 11, by Michael Tauber & Co., auctioneers, Chicago.

Southern States

SARASOTA, FLA.—Whirlwind Mowers Inc. has been incorporated with $10,000 capital, by T. T. Watrous and L. E. White, Sarasota, Fla.

TAMPA, FLA.—Miller Lenfestey Supply Co. has been incorporated with $37,500 capital to deal in machinery and supplies, by G. S. Lenfestey and R. W. Miller.

LOUISVILLE, KY.—American Medical Spirits Co. Inc., Bernheim Lane street, has bought the Sunnybrook Distillery Co. plant and will add to it, including new machine shop, power plant and other departments, for a distillery. Cost estimated at $300,000.

HOUSTON, TEX.—Todd Dry Dock & Shipbuilding Co., New York, announces plans for a dry dock plant on the Houston ship channel at an investment in buildings and equipment of about $2,500,000. This includes a machine shop and equipment at $100,000 and a power plant at $50,000, cranes, trucks and other equipment. A subsidiary company may be formed to operate the Houston plant.

Wisconsin

JANESVILLE, WIS.—Whitnall Engineering Co. has been organized by Edward F. Whitnall and associates, formerly associated with the Northern Conveyor & Mfg. Co. as executives, and will engage in the manufacture of stationary and portable conveyors and allied products.

Pacific Coast

WALLACE, IDAHO—Stockholders of the Sunset Brewing Co., whose plant was dismantled and equipment shipped to Canada in 1927, are considering plans to spend $30,000 reconstructing and reopening. Homer G. Brown is manager and secretary.

GRANTS PASS, OREG.—California & Oregon Coast railroad has requested permission from the interstate commerce commission to build a 72-mile line from Waters Creek, Oreg., to Crescent City, Calif., to handle timber, mineral and agricultural products.

CHEHALIS, WASH.—Canny Brewing Co. has been incorporated with $100,000 capital and will establish a plant with capacity of 15,000 to 20,000 barrels annually. James E. Canny, Seattle, is president.

PASCO, WASH.—City council is negotiating with engineers for a preliminary survey for a filtration plant.

PORT TOWNSEND, WASH.—Peninsular Brewery has been incorporated with $15,000 capital by B. W. Porter and E. J. Dailey.

SEATTLE—Bids will be called soon by Joseph Wohleb, architect, Olympia, Wash., for remodeling the plant of the former Seattle Brewing & Malting Co., 3100 Airport way, Seattle, for occupancy by the Century Brewing Co., at cost of about $100,000. (Noted July 3.)

SOUTH BEND, WASH. — Wallapa Harbor Iron Works, Dan Coulter, manager, is rebuilding its foundry building, recently burned.

TACOMA, WASH.—Interests behind the proposed bridge to cross the Narrows, to cost $3,000,000, have been advised the R. F. C. has approved the project. Approval of the plans now is being sought and a loan of $2,300,000 will be asked.

Dominion of Canada

TORONTO, ONT.—Rochester Circulator Co., Rochester, N. Y., will establish a plant here for the manufacture of electrical circulating pumps for heating systems.

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